204244

SITE REASSESSMENT

EIGHTH STREET SITE
AKA: HUDSON COUNTY CHROMATE SITES # 76 AND # 77
EPA ID No.: NJD986571115

JERSEY CITY, HUDSON COUNTY NEW JERSEY

EPA COPY

September 2010
New Jersey Department of Environmental Protection
Bureau of Environmental Measurements and Site Assessment

Eighth Street Site
AKA: Hudson County Chromate Site #76 and #77
379 – 383 Eighth Street
Jersey City, Hudson County, New Jersey 07302
Latitude: 40.727215 Longitude: - 74.050938
EPA ID No. NJD986571115

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SITE REASSESSMENT REPORT

Eighth Street Site
A.K.A. Hudson County Chromate Sites #76 and #77
379-383 Eighth Street
Jersey City, Hudson County, New Jersey 07302
Latitude: 40.727215° Longitude: - 74.050938°
EPA ID No. NJD986571115

INTRODUCTION

The United States Environmental Protection Agency (EPA) has tasked the New Jersey Department of Environmental Protection (NJDEP) with a Site Reassessment to gather and evaluate new information on the Jersey City Chromium Waste Site A.K.A. Hudson County Chromate # 76 located in Jersey City, Hudson County, New Jersey, to determine whether further action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) is needed. (Attachment A)

Sometime prior to 1961 chromate waste contaminated fill was placed upon a portion of the site, located at 383 Eighth Street (Block 417, Lot 28). In approximately 1961 a warehouse was constructed on top of this chromate waste fill. In 1987 evidence of chromium contamination was observed during floor removal activities. The impacted concrete and debris was stored on a vacant portion of the site, property located at 379 – 381 Eighth Street (Block 417, Lot 33). This vacant lot would become known as Hudson County Chromate Site #76 while the warehouse located at 383 Eighth Street would be known as Hudson County Chromate #77.

A Preliminary Assessment (PA) was completed by NUS Corporation on June 9, 1989. The PA report recommended a Medium Priority Site Inspection to determine the extent of any possible chromium contamination. On May 8, 1990 the NJDEP issued a No Further Action for site # 76 located at 379 – 381 Eighth Street with respect to the chromate contaminated materials; however, a No Further Action designation has not been given for site #77. (Attachments B and Q)

SITE LOCATION

Address: 379 – 383 Eighth Street
Municipality: Jersey City **County:** Hudson **State:** New Jersey
Zip Code: 07302
Block: 417 Lots: 28 and 33 (Lot 33 consists of former lots 29 and 30)
Congressional District: 13th
USGS Quadrangle(s): Jersey City, N.J.-N.Y.
Latitude: 40.727215° Longitude: - 74.050938°

Area Description

The site is located in a commercial/residential section of Jersey City and is currently occupied by two structures, an approximate 2,400 square foot, single-story cinder-block/brick warehouse located on Block 417, Lot 28 (383 Eighth Street) and a newer approximately 5,000 square foot, two-story building located on Block 417, Lot 33 (379 – 381 Eighth Street). The site is operated by GKY Industries, a distributor of industrial hardware and supplies (fasteners, hose fittings, cutting tools and other shop related products). The site is bordered to the north by Eighth Street, to the south by the commercial and residential properties, to the east by a paved parking lot (Lot 31) also operated by GKY Industries and to the west by Danny's Towing and Used Cars.. Surrounding land-use is commercial and residential. Enos Jones Park (Jones Park), consisting of baseball fields, a roller hockey rink and play grounds, is located north of the site directly across Eighth Street. The nearest school is the Resurrection School located approximately 200 feet south southeast of the site. The Holy Rosary School is located approximately 375 feet southeast of the site. (Attachments C, E, F and V and Maps 2A and 2B)

SITE HISTORY

Review of Sanborn Fire Insurance Maps indicates the site was developed as far back as 1906 with a storage shed and a single story building. From approximately 1905 up until approximately 1971, three companies operated chromite ore processing plants within Hudson County:

1. PPG Industries (PPG) operated a plant along Garfield Avenue within Jersey City
2. The predecessor and subsidiaries of Allied Signal, Inc. operated a plant on Route 440 within Jersey City and
3. The predecessor and subsidiaries of Occidental Chemical Corp. (Diamond Shamrock) operated a plant on Belleville Turnpike in Kearny

Over two million tons of chromite ore processing residue (chromate waste) were used as fill for various construction and development projects throughout Jersey City, Bayonne, Kearny, Newark and Secaucus in Hudson and Essex Counties, New Jersey. To date no information on which company produced the chromate waste used as fill on the Eight Street Site, and as such is known within the NJDEP as an "orphan chrome site, specifically it grouped in the Hudson County Chromate Orphan Sites Group 1. (Attachment H)

Sometime prior to 1961 chromate waste contaminated fill was placed upon a portion of the site, located at 383 Eighth Street (Block 417, Lot 28). Records indicate that in the early 1960s an approximate 2,400 square-foot brick and cinder block building was constructed on Block 417, Lot 28, on top of this contaminated fill. In March 1987 the operator, Modern Village Development, replaced the existing concrete floor within the warehouse located at 383 Eighth Street due to deterioration. Upon removal yellow staining on the concrete was observed. The resultant concrete debris and soil were then placed on the then vacant lot located adjacent to the warehouse (381 Eighth Street.). At the time the new concrete floor was constructed, a Jersey City representative inspected the warehouse and observed staining on the concrete walls within the warehouse. A sample collected from the staining confirmed the presence of chromate. The Jersey City representative directed Modern Village Development to remove the staining and seal the walls in addition to conducting air sampling within the warehouse. On July 10, 1987 Aguilar Associates & Consultants, Inc. conducted air sampling within the warehouse. The results revealed no detection of chromium. On July 24, 1987 the interior walls of the warehouse were sealed so as to prevent migration of the chromate waste into the foundation walls. (Attachments B and C)

The June 9, 1989 PA report indicates that Modern Village Development requested an EPA ID number (NJD982274250) for the removal of the chromate contaminated material from 381 Eighth Street. Documentation indicates that this material was placed into five 55-gallons drums and manifested off-site on February 26, 1988. (Attachments B and J)

Local residents petitioned the NJDEP to sample the vacant lot, and on October 23, 1989 the NJDEP collected nine soil samples from 379 – 381 Eighth Street, which was also know as Chromate Site #76. Several of the samples were collected from footing excavations dug in for the future building currently located on the property. Of the nine soil samples collected only two (S-2 and S-3) exhibited total chromium above the then 75 parts per million (ppm) action level at 705 ppm and 262 ppm, respectively. Both samples were collected adjacent to the outside wall of the warehouse located at 383 Eighth Street which was also known as Chromate Site #77. Due to the elevated levels of chromium within the two soil samples, Modern Village Development proposed excavating soils on Site #76 adjacent to the existing warehouse building located on Site #77, and place a vapor barrier between the warehouse and the building proposed for 379-381 Eighth Street.
(Attachments K, L and M)

The NJDEP required further sampling of Site # 76 and on February 20, 1990 conditionally approved a Sampling Plan for 379 – 381 Eighth Street. Documentation indicates that prior to submitting the sampling plan to the NJDEP, Modern Village Development contracted with Accutech Environmental Services, Inc. (Accutech) to collect soil samples at Site #76. A Subsurface Investigation Report for Modern Village Development, dated March 8, 1990, indicated that on January 31, 1990 Accutech collected 23 soil samples from nine hand auger borings. Sample depths ranged from 0 to 6-inches, "A" sample, 24 to 30-inches, "B" sample and 54 to 60-inches, "C" sample. The samples were analyzed for total chromium by All Service Testing of Somerset, New Jersey (Laboratory Certification # 18712). Only two samples, B3A and B7A, exhibited total chromium above the 75 ppm action level at 77.7 ppm and 154 ppm, respectively.
(Attachments N and O)

Soils on Site #76 adjacent to the warehouse building located on Site #77 were excavated. The excavation extended a distance of three feet along the eastern side of the warehouse building to a depth of three feet.

Another Subsurface Investigation Report for Modern Village Development, dated April 1990, indicates that on March 15, 1990, Accutech personnel collected 25 soil samples from nine borings, located near the January 31, 1990 locations. Analysis of the samples for total chromium was again completed by All Service Testing. Only two surface samples, B6A and B8A, exhibited total chromium above the then 75 ppm action level at 75.3 ppm and 93.4 ppm, respectively. The report theorizes that the elevated chromium may have been attributed to the removal of soils adjacent to the warehouse building. The report stated that the eastern side of the warehouse building had been covered with a liner and the excavation filled with concrete. (Attachments N, O and P)

In correspondence dated May 8, 1990, the NJDEP indicated that based upon review of the April 1990 Subsurface Investigation Report, the excavation and disposal of residual chromate contaminated soils and the installation of a "Permalon" liner beneath the concrete foundation and western footings of the proposed building the property located at 379 – 381 Eighth Street, Site #76 was no longer considered a chromate chemical production waste site. The correspondence further stated that the adjacent property located at 383 Eighth Street (Site #77) shall remain as a known chromate waste site. (Attachment Q)

Currently, Hudson County Chromate Site # 76 is almost entirely occupied by a two-story building constructed in 1991. The building operates as a warehouse and showroom for GKY Industries, a wholesale hardware supplier.

Investigation of Chromate Waste Site #77

In January 1998 L. Robert Kimball & Associates, Inc. (Kimball) completed a background investigation report for Site #77, which had been grouped into the Hudson County Chromate Orphan Sites Group 1. Kimball completed the report for the NJDEP under a Remedial Investigation Contract A-78384. The report concluded that based on documentation chromate waste was likely present beneath the concrete flooring of the warehouse building located at 383 Eighth Street. During a May 29, 1997 inspection, hexavalent chromium crystals were visible on the walls within the warehouse. (Attachment S)

Kimball Associates conducted further investigation of the site on behalf of the NJDEP in March 1998, October 1999 and December 1999. The results of these investigations were compiled into a Preliminary Site Characterization Report with Final Site Characterization Recommendations dated May 2001. (Attachment T)

The investigation included the collection of 87 building material samples along with seven duplicates extracted from drill cuttings from mortar, chip samples from building walls and core samples from floors and sidewalks at 24 four locations on site. The samples were analyzed for total and hexavalent chromium. Review of Table 3 within the report indicated, of the building material samples collected, 22 exhibited hexavalent chromium above the then 20 ppm Non-Residential Direct Soil Cleanup Criteria. The highest concentration was detected in a motor sample 077BD16-0.4-0.7 which exhibited hexavalent chrome at 5,330 ppm. The sample exhibited visible evidence of hexavalent chromium contamination (bright yellow crystals). During sampling visible evidence of chromium leaching into the floor slab was observed at soil boring locations SB04 and SB05. The report stated that the sample data suggested that hexavalent chromium migration through the floor was inhibited by the concrete slab while migration of chromium into the cinderblock walls occurred more readily. (Attachment T)

Initially eight soil borings (SB01 to SB08) were completed within the warehouse and two soil borings (SB09 and SB10) were completed in the sidewalk in front of the warehouse in March 1998; however due to laboratory error the analytical results for samples collected from these borings were lost. (Attachment T)

In October 1999 soils borings SB04, SB09 and SB10 were again advanced in their approximate locations. In addition to these soils borings, soil borings SB32 and SB33 were advanced within the warehouse, and three soil borings SB29, SB30 and SB31 were completed offsite. SB29 was completed on Block 417, Lot 31, just east of former Chromate Site #76 within a parking lot, SB-30 was completed within the sidewalk along the north side of Eight Street approximately 60 feet north of the site and SB31 was completed approximately 160 feet south of the site along Seventh Street. A total of 36 soil samples along with two duplicates were collected and analyzed for volatiles organics, semivolatile organics, pesticides, PCBs, metals, total and/or hexavalent chromium, among others by Core Laboratory Inc. of Edison, New Jersey and/or Chemtech Group. No volatile organics were detected above NJDEP Soil Cleanup Criteria in the three samples analyzed for such compounds. Several poly aromatic hydrocarbons (PAHs) including benzo(a)antharcene and benzo(a)pyrene were detected above NJDEP SCC in samples collected from SB04 and SB10 at concentrations up to 4.6 ppm. The pesticide and PCB results for the samples analyzed for such compounds were reported to be rejected. Soil samples collected from SB04, SB10, SB32 and SB33 all exhibited elevated concentrations of hexavalent chromium at concentrations ranging from 25.6 ppm to 188 ppm (SB33). On-site samples also exhibited concentrations of antimony, nickel, thallium and/or vanadium above their respective NJDEP SCC at that time. The report indicates that most of the contaminants including chromium were detected within the top 3 feet of fill material below the floor/sidewalk. None of the off-site samples were reported to contain elevated concentrations of contaminants of concern. (Attachment T)

Between October 13 and 20, 1999 four shallow monitoring wells were installed. MW01 was installed within the center of the warehouse building (located at 383 Eighth Street) at soil boring location SB04; MW02 was installed along the southern sidewalk of Seventh Street approximately 160 feet south of the site at soil boring location SB31; MW03 was installed just east of Site #76 within a parking lot located on Block 417, Lot 31 at soil boring location SB29 and MW04 was installed along the sidewalk in front of the site at boring location SB30. The wells ranged from 12 to 13 feet in depth. On December 13, 1999, both filtered and unfiltered ground water samples were collected from the wells and delivered to Chemtech Group for analysis. The unfiltered samples were analyzed for volatile organics, semivolatile organics, pesticides, PCBs, metals and hexavalent chromium while the filtered samples were only analyzed for metals and hexavalent chromium. (Attachment T)

Acetone was detected at 70 ppb in a sample collected from MW04; however, this is well below its NJDEP Ground Water Quality Standard (GWQS) of 6,000 ppb. No volatile organics were detected in the ground water samples collected. No semivolatile organics, pesticides or PCBs were detected in any of the samples collected.

Total chromium concentrations ranged from non-detect to 54.1 ppb detected in MW01; however, this is below its 70 ppb NJDEP GWQS. No hexavalent chromium was detected in any of the samples collected. Lead was detected in the unfiltered samples collected from wells MW01, MW03 and MW04 with concentrations ranging from 19.9 ppb (MW04) to 42.4 ppb (MW01), all of which exceed the NJDEP GWQS of 5ppb. None of the filtered samples exhibited detectable concentrations of lead. Elevated concentrations of aluminum, iron, manganese and sodium were also detected in the on-site/near-site and or downgradient wells (MW01, MW03 and MW04); however these analytes were also detected in the off-site upgradient well (MW02) at similar concentrations. In addition, both the filtered and unfiltered samples collected from MW02 exhibited arsenic above the 3.0 ppb NJDEP GWQS at 10.6 ppb and 12.4 ppb, respectively.

Wipe samples were collected during the sampling events and analyzed for total and hexavalent chromium. No hexavalent chromium was detected in any of the wipe samples.

The May 2001 report recommended inspecting adjacent structures to the west and south, inspecting a residential property immediately southeast of the site, conducting additional borings within the sidewalk north east and west of the site to delineate the extent of the chromate contamination and to conduct another round of monitoring well sampling. (Attachment T)

Between May 13 and November 8, 2002, The Louis Berger Group, Inc. (Berger) conducted final site characterization sampling on Site #77 for the NJDEP. Activities included the inspection of adjacent structures south (Art Moving Company) and west (Danny's Towing and Used Cars) of the site, the installation of 10 soil borings within the sidewalk north of the site and on adjacent commercial and residential properties to the west and south, the collection of 72 soil samples from the borings and the collection of two rounds of ground water samples from the previously installed monitoring wells. (Attachment U)

No evidence of chromate waste was observed at the adjacent structures to the south and west.

As stated the investigation included the advancement of ten soil borings around the perimeter of the site. Two borings (77S101 and 77S102) were completed in the sidewalk just north of the site to delineate the hexavalent chromium detected in a pervious boring SB10. Three borings (77S103, 77S105 and 77S106) were completed on property located adjacently west of the site, Block 417, Lot 27 (Danny's Towing and Used Cars). Two borings (77S107 and 77S108) were completed on property operated by the Art Moving Company (Block 417, Lots 13 and 14) located adjacently south of the site. The last three borings (77S109, 77S110 and 77S111) were completed on residential properties located south of the site (Block 417, Lots T and U). (Attachment U)

The borings were advanced until native soils were encountered which ranged from 12 to 18 feet. Soil samples collected at various depths within the borings were analyzed for hexavalent chromium and the metals antimony, beryllium, cadmium, chromium, nickel and vanadium by Mitkem Corporation of Warwick, Rhode Island (NJDEP Certification # 78001). In addition, one sample for total petroleum hydrocarbon analysis was collected from boring 77S106 at a depth of six to seven feet; however, review of soil boring logs indicate that boring 77S105 not boring 77S106 exhibited petroleum odors. (Attachment U)

Hexavalent chromium was detected in 27 of the 72 samples collected with concentrations ranging from 0.95 ppm to 8.8 ppm, all of which were below the then 20 ppm NJDEP SCC. Only two samples exhibited contaminants at concentrations exceeding NJDEP SCC, samples 77S102G and 77S105A both contained antimony above the then 14 ppm NJDEP SCC at 19.3 ppm and 15.0 ppm, respectively. The current NJDEP Soil Remediation Standard (SRS) for antimony is 31 ppm. Sample 77S106C exhibited a TPH value of 8,100 ppm. No additional volatile analysis was conducted on this sample.

Two rounds of ground water samples were collected from all four monitoring wells (MW01 – MW04 on October 17 to18 and November 7 to 8, 2002. Both filtered and unfiltered samples were collected and delivered to Mitkem Laboratories for hexavalent chromium, metals, volatile organics, semivolatile organics, pesticides and PCB analysis among others. None of the ground water samples collected exhibited detectable concentrations of hexavalent chromium and no metals associated with chromate waste were detected at concentrations exceeding NJDEP GWQS. Iron and manganese were detected in all the monitoring well at concentrations exceeding their respective NJDEP GWQS. MW03 exhibited lead at concentrations up to 33.6 which exceeds the current NJDEP GWQS of 5.0 ppb. In addition this monitoring well also exhibited MTBE at concentrations up to 140 ppb which exceeds the 70 ppb NJDEP GWQS. The background monitoring well, MW02, also exhibited arsenic at concentrations up to 43.9 ppb. (Attachment U)

The report concluded that chromate waste appears to be limited to the site and estimated the volume of waste to be approximately 445 cubic yards, the on-site chromate waste has not adversely impacted on-site ground water, and that the antimony and other metals detected in the soils and ground water samples were believed to be the result of the historic fill placed in the area of the site. (Attachment U)

Review of NJDEP records suggest that no further investigation/remediation of Hudson County Chromate Site #77 has been conducted and that a NFA for the site (Site #77) has not been issued. Currently the site is operated by GKY Industries, a wholesale hardware supplier. An NJDEP inspection conducted on September 22, 2010 indicated that the building located at 379-381 Eight Street was used as a warehouse showroom and office while the building located at 383 Eighth Street was used as a warehouse and store front. No evidence of hexavalent chromium contamination (yellow staining) was observed along the floor or walls of the buildings.

SOURCE/AREA OF CONCERN SUMMARY

Source / AOC ID	Description	Remedial Activities Conducted	Current Status
Chromium Waste Contaminated Fill	Documentation suggests that chromate waste was used as fill on site prior to 1961 when the warehouse on Block 417, Lot 28 was constructed. Evidence of chromate contamination was observed in 1987 during construction activities within the warehouse, which became known as Hudson County Chromate Waste Site #77. The impacted material was removed and stored on Lots 29 and 30 (currently Lot 33), this property became known as Hudson County Chromate Waste Site #76.	Impacted concrete and soil resulting from activities on Lot 28 were stored on 379 – 381 Eighth Street (Lot 33). This material was later properly disposed. Soil sampling conducted by the NJDEP in October 1989 indicated elevated levels of chromium along the eastern wall of the warehouse. As a result of this and other soil sampling the operator of the site excavated soils on Site #76 adjacent to the warehouse, filled the excavation with concrete and covered the western side of the warehouse with polyethylene sheeting. On May 8, 1990, the NJDEP stated that Site #76 was no longer considered a chromate waste site. A Preliminary Site Characterization conducted between March 1998 and December 1999 on Site #77 indicated that chromate waste was present beneath the warehouse and front sidewalk. Evidence of hexavalent chromium migration into the structure was observed with hexavalent chromium detected as high as 5,330 ppm in a building material sample. The report also indicated that ground water was not impacted by chromate waste related contaminants. A Final Site Characterization conducted between May and November 2002 included the collection of off-site soil samples on adjacent commercial and residential properties. The report concluded that the chromate waste was limited to Site #77 and no adjacent structures or properties were impacted .	On May 8, 1990 the NJDEP stated that property located at 379-381 Eighth Street (Site #76) was no longer considered a chromate waste site due the removal of chromium impacted material/soil and the placement of a liner. No records indicating further removal and or remediation of the chromate waste, impacted soils and or impacted building material at 383 Eighth Street were found in the files reviewed. Neither a NFA has been issued nor a Deed Notice filed for the Site #77. Almost the entire site is either developed or paved. Currently the site is operated by GKY Industries, a wholesale hardware supplier.

CURRENT HAZARD ASSESSMENT

Sometime prior to 1961 chromate waste contaminated fill was placed upon a portion of the site located at 383 Eighth Street (Block 417, Lot 28). In approximately 1961 a warehouse was constructed on top of this contaminated fill. In 1987 evidence of chromium contamination was observed during floor removal activities. The impacted concrete and debris was stored on a vacant portion of the property located at 379 – 381 Eighth Street. This vacant lot would become known as Hudson County Chromate Site #76 while the warehouse located at 383 Eighth Street would be known as Hudson County Chromate #77. Documentation suggests that the resultant waste generated from the warehouse repair was manifested off-site in February 1988. Additional soils were excavated on Site #76 along the eastern wall of the warehouse (Site #77). This material was removed, but no manifests of its removal were found in the files reviewed. In correspondence dated the NJDEP stated that Site #76 was no longer considered a chromate waste site. Sampling on a portion of the site, Block 417, Lot 28, (Site #77) indicated that chromate wastes are located beneath the concrete floor of the warehouse to a depth of approximately 3 feet. Inspections within the warehouse indicated that hexavalent chromium had migrated into the building structure (yellow staining observed on the cinder block walls). Records indicating the removal of the chromate waste beneath the warehouse were not found in the files reviewed. The chromate waste and impacted soils are covered by the concrete floor of the warehouse and/or pavement. No records of any institutional controls (Deed Notices) being filed for the site were found in the files reviewed and a No Further Action has not been issued for Site #77 by the NJDEP. A NJDEP inspection conducted on September 22, 2010 did not observe any obvious evidence of hexavalent chromium migration (yellow staining) within the on-site buildings. (Attachments B, O, P, Q, R, S, T and U)

SOURCES

Documentation suggests that chromate waste was used as fill on property located at Block 417, Lot 28 prior to 1961. In approximately 1961 a warehouse was constructed on this portion of the site.

Visual signs of chromium contamination (yellow-green crystals) were observed on the undersides of concrete removed during the repair of the floor within the warehouse in 1987. The impacted concrete and material were placed on a then vacant portion of the site (379-381 Eighth Street). This material was later manifested off-site. Sampling conducted during Preliminary and Final Site Characterization studies determined that chromate wastes were limited to Block 417, Lot 28 and the front sidewalk. Evidence of hexavalent chromium migration into the walls of the warehouse was observed. These investigations determined that on-site ground water had not been impacted with contaminants associated with chromate waste, however other contaminants associated with area wide historic fill were detected. A Final Site Characterization Report stated that the volume of chromate contaminated soil to be approximately 445 cubic yards. No records of the removal of any additional chromate waste or contaminated soil beneath the floor of the warehouse were found in the files reviewed. The site is almost entirely developed with buildings and/or pavement. No institutional controls (Deed Notices) have been filed for the site and a No Further Action has not been issued for the Site #77 by the NJDEP. Currently the site is operated by GKY Industries, a wholesale hardware supplier. (Attachments B, O, P, Q, R, S, T, U and V)

Ground Water Migration Pathway

The site lies within the Piedmont physiographic province along the eastern edge of the Newark Basin. Bedrock beneath the site is made up of sedimentary rocks of the Triassic Newark Group consisting of gray arkose (sandstone) conglomerates and red shales of the Stockton Formation and consists of red to gray fine to coarse sandstone with thin layers of gray to purple siltstone. A Jurassic age diabase, Manhattan Schist, intrudes the Stockton in the area of the site. Bedrock is expected at a depth of 40 feet below ground surface in the area of the site.

Pleistocene glacial drift deposits consisting of silty clays with occasional beds of sands and gravels and sand and gravel beds with occasional silt-clay layers overlay the Stockton Formation in the area of the site. More recent salt-marsh and estuarine deposits consisting of fine sediment and organic materials (meadow mat) overlie these glacial deposits to a depth of approximately 12 feet below ground surface. Overlying the salt-marsh and estuarine deposits is historic fill consisting of various amounts of sand, silt gravel, slag, coal ash, glass, brick and concrete fragments to a depth of approximately up to 12 to 18 feet. Soil sampling has determined that the chromate waste fill extends to a depth of approximately 3 feet below ground surface beneath a portion of the site (Site ##77). (Attachments S, T and U)

Four shallow monitoring wells were installed on or near the site in October 1999. The monitoring wells were sampled three times, between December 1999 and November 2002. Analysis did not indicate any chromium waste related contaminants impacting ground water on or in the area of the site; however, contaminants associated with historic fill, arsenic, and lead as well as MTBE were detected above NJDEP Ground Water Quality Standards.

Targets Associated with the Ground Water Migration Pathway

There are no public supply wells within four miles of the site. Area residents and businesses are supplied with water by United Water (Jersey City), formerly the Jersey City Water Department. The site is not located within a wellhead protection area and no wellhead protection areas are located within 4.0 miles of the site. The site is located within a highly urbanized area and ground water within the area of the site is not used for irrigation of crops. All wastes on site area covered by building and or pavement and monitoring well sampling has not indicated any chromate waste related impacts. Based on this the Ground Water Migration Pathway will not be evaluated. (Attachments U and W)

Surface Water Pathway

No surface water bodies are located on or near the site. The nearest water body is the Hudson River at Harsimus Cove located 4,500 feet east of the site. The site is almost entirely developed, and any precipitation would be directed to the municipal sewer system. The Hudson River is classified as SE2. Designated uses for SE2 waters include maintenance, migration and propagation of established biota and secondary contact recreation. The Hudson River flows south into Upper Bay forming the boundary between New Jersey and New York. (Attachment B and S)

Targets Associated with the Surface Water Migration Pathway

Since waste material noted in 1988 has been removed and all remaining waste is located beneath an impervious cap (the warehouse building at 383 Eighth Street a surface water exposure pathway does not exist and will not be evaluated. (Attachments B, S and U)

Soil Exposure Pathway

Documentation suggests that chromate waste was used as fill on a portion of the site, property located at Block 417, Lot 28, prior to 1961. In approximately 1961 a warehouse was constructed on this portion of the site. Visual signs of chromium contamination (yellow-green crystals) were observed on the undersides of concrete removed during the repair of the floor within the warehouse in 1987. The impacted concrete and material were placed on a then vacant portion of the site (379-381 Eighth Street). This material was later manifested off-site. Sampling conducted during Preliminary and Final Site Characterization studies determined that chromate wastes are limited to Block 417, Lot 28 and the front sidewalk. Evidence of hexavalent chromium migration into the walls of the warehouse was observed. A Final Site Characterization Report stated that the volume of chromate contaminated soil to be approximately 445 cubic yards. No records of the removal of any additional chromate waste or contaminated soil beneath the floor of the warehouse were found in the files reviewed. The site is almost entirely developed with buildings and/or pavement. No institutional controls (Deed Notices) have been filed for the site and a No Further Action has not been issued for the Site #77 by the NJDEP. Currently the site is operated by GKY Industries, a wholesale hardware supplier.

Targets Associated with the Soil Exposure Pathway

Impacted soils are located beneath the concrete floor of the warehouse and beneath the front sidewalk greatly reducing potential exposure to the general public; however workers within the warehouse have the potential to be exposed to hexavalent chromium, observed as yellow crystals along the walls of the warehouse. Migration of hexavalent chromium into the concrete floor was also observed. Documentation indicates that GKY Industries employs twenty people. (Attachments E, F, T and U)

Air Migration Pathway

Documentation suggests that chromate waste was used as fill on a portion of the site, property located at Block 417, Lot 28, prior to 1961. In approximately 1961 a warehouse was constructed on this portion of the site.

Visual signs of chromium contamination (yellow-green crystals) were observed on the undersides of concrete removed during the repair of the floor within the warehouse in 1987. The impacted concrete and material were placed on a then vacant portion of the site (379-381 Eighth Street). This material was later manifested off-site. Sampling conducted during Preliminary and Final Site Characterization studies determined that chromate wastes were limited to Block 417, Lot 28 and the front sidewalk. Evidence of hexavalent chromium migration into the walls of the warehouse was observed. These investigations determined that on-site ground water had not been impacted with contaminants associated with chromate waste.; however other contaminants associated with area wide historic fill were detected. A Final Site Characterization Report stated that the volume of chromate contaminated soil to be approximately 445 cubic yards. No records of the removal of any additional chromate waste or contaminated soil beneath the floor of the warehouse were found in the files reviewed. The site is almost entirely developed with buildings and/or pavement. No institutional controls (Deed Notices) have been filed for the site and a No Further Action has not been issued for the Site #77 by the NJDEP. Currently the site is operated by GKY Industries, a wholesale hardware supplier. (Attachments E, F, T and U)

Targets Associated with the Air Migration Pathway

Contaminated fill is located on-site; however, it is located beneath a cap, the concrete floor. Evidence of hexavalent chromium blooms (yellow staining/crystals) has been observed on the walls within the warehouse; however, no evidence of hexavalent chromium contamination was observed during a September 20, 2010 site inspection. Documentation indicates that GKY Industries employs approximately twenty people. There are approximately 76,734 people residing within mile of the site. (Attachments B, F, T and V and Map 6)

CONCLUSIONS

Documentation suggests that chromate waste was used as fill on site prior to 1961 when the warehouse on Block 417, Lot 28 was constructed. Evidence of chromate contamination was observed in 1987 during construction activities within the warehouse which later became known as Hudson County Chromate Waste Site #77. The impacted concrete and soil resulting from activities on Lot 28 were stored on Lots 29 and 30 (currently Lot 33) at 379 – 381 Eighth Street. This property became known as Hudson County Chromate Waste Site #76.

The impacted concrete and soil resulting from activities on Lot 28 and stored on Lot 33 was later properly disposed. Soil sampling by the NJDEP in October 1989 indicated elevated levels of chromium along the eastern wall of the warehouse.. As a result of this and other soil sampling, the operator of the site excavated soils adjacent to the warehouse, filled the excavation with concrete and covered the western side of the warehouse with polyethylene sheeting. On May 8, 1990, the NJDEP stated that Site #76 was no longer considered a chromate waste site due to the soil removal and liner placement.

A Preliminary Site Characterization conducted between March 1998 and December 1999 on Site #77 indicated that chromate waste was present beneath the warehouse and front sidewalk. Evidence of hexavalent chromium migration into the structure was observed with hexavalent chromium detected as high as 5,330 ppm in a building material sample. The report also indicated that ground water was not impacted by chromate waste related contaminants. A Finial Site Characterization was conducted between May and November 2002 and included the collection of off-site soil samples on adjacent commercial and residential properties. The report concluded that the chromate waste was limited to Site #77 and adjacent structures or property had not been impacted. No institutional controls (Deed Notices) have been filed for Site #77 and a No further Action designation from the NJDEP has not been issued. Currently the site is operated by GKY Industries, a wholesale hardware supplier.

No sources subject to or requiring further action under CERCLA were identified on site. The site has a Quickscore below 28.5 and thus warrants a No Further Remedial Action Planned (NFRAP) designation under CERCLA. Any additional actions will be managed and/or conducted by the NJDEP.

Submitted by: Andrew J. Cyr / ______________________
NJDEP, Bureau of Environmental Measurements and Site Assessment
September 28, 2010

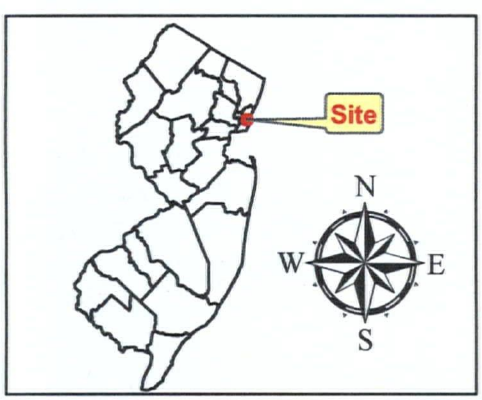
MAPS

Eighth Street Site
AKA: Hudson County Chromate Sites #76 and #77
379-383 Eighth Street
Jersey City, Hudson County, New Jersey
EPA ID NJD986571115
Lat: 40.727215 °
Long: -74.050938 °

USGS Jersey City, N.J.-N.Y. Quadrangle (1981)

MAP-1

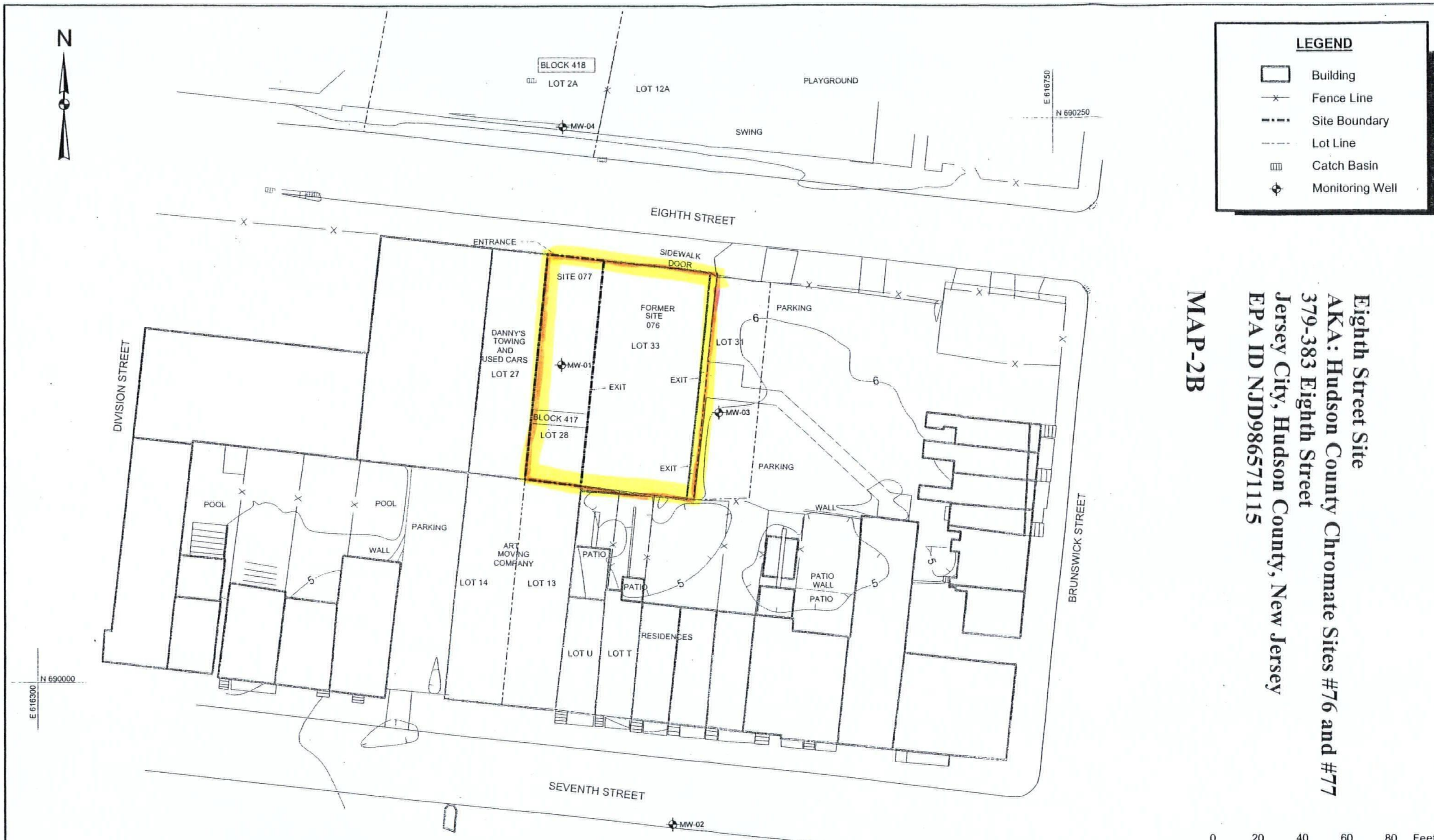
2007 aerial photograph



0 100 200 400 600 800 Feet

Eighth Street Site
AKA: Hudson County Chromate Sites #76 and #77
379 - 383 Eighth Street
Jersey City, Hudson County, New Jersey
EPA ID NJD986571115

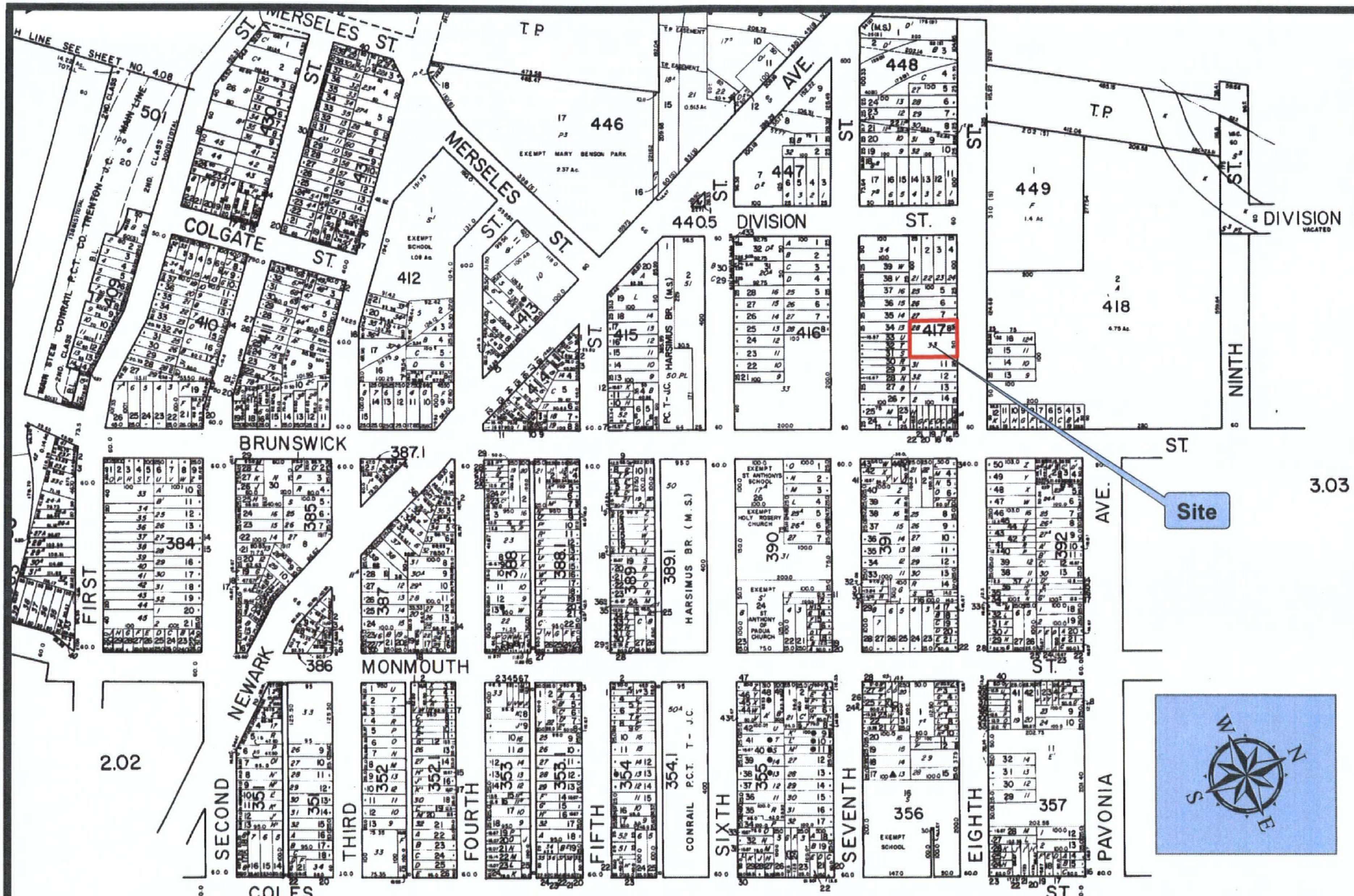
MAP-2A



Base map source: L. Robert Kimball & Associates, Inc. April 3, 1997
NJ State Plane Coordinate System (NAD83)

N.J. Department of Environmental Protection	HUDSON COUNTY CHROMATE ORPHAN SITES - SITE 077 - 8TH STREET NO. 2, JERSEY CITY, HUDSON COUNTY, NEW JERSEY **SITE PLAN** NJDEP CONTRACT No. A-85149	The Louis Berger Group, Inc. 30 Vreeland Road Florham Park, NJ	FIGURE 2

S077_SP/27JAN04

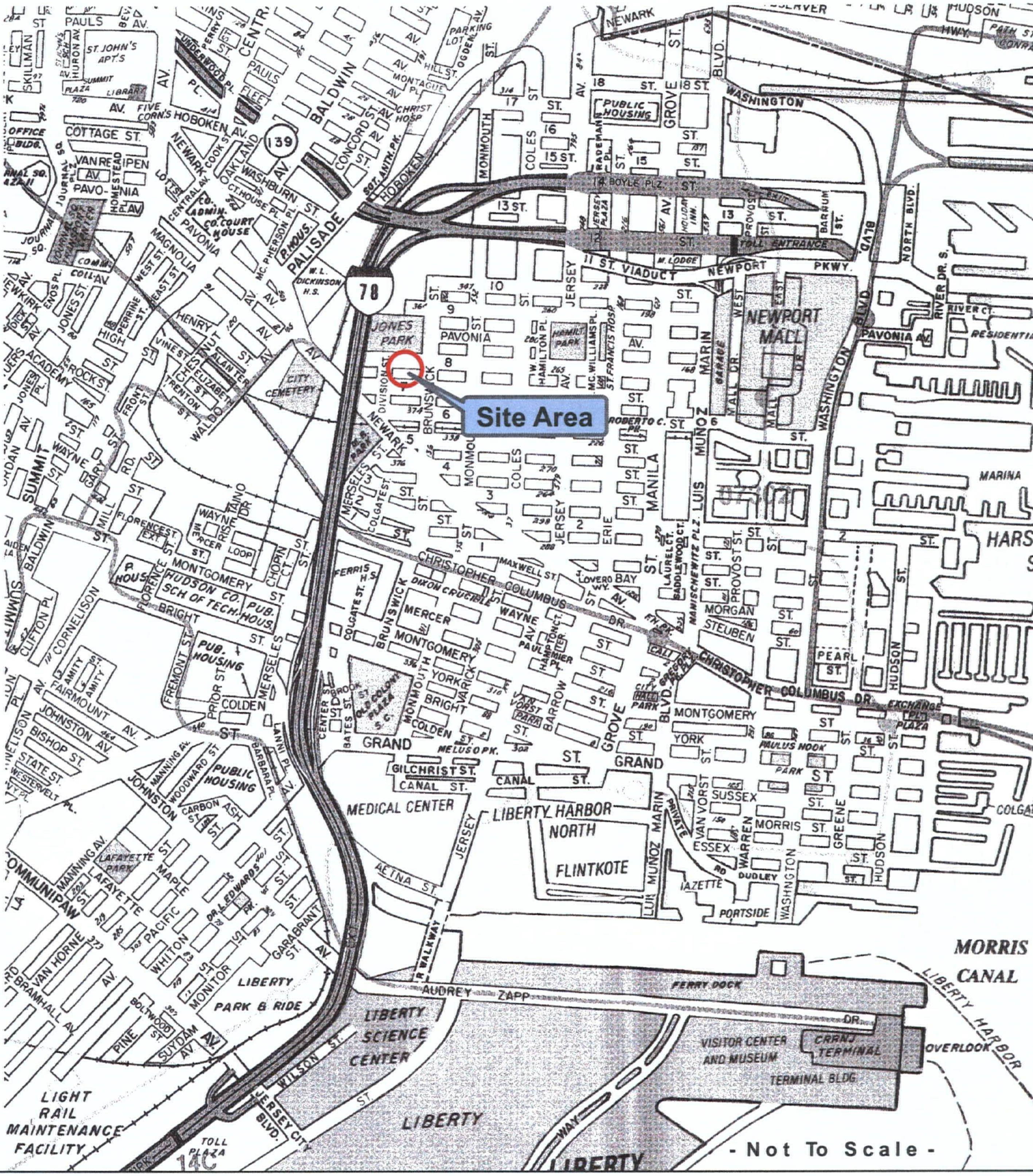


Not to Scale

Eighth Street Site
AKA: Hudson County Chromate Sites #76 and #77
379-383 Eighth Street
Jersey City, Hudson County, New Jersey
EPA ID NJD986571115

MAP-3

Block 417, Lots 28 and 33 Jersey City Tax Map (1977)



N

W E

S

MAP-4

Eighth Street Site
AKA: Hudson County Chromate Sites #76 and #77
379 - 383 Eighth Street
Jersey City, Hudson County, New Jersey
EPA ID NJD986571115

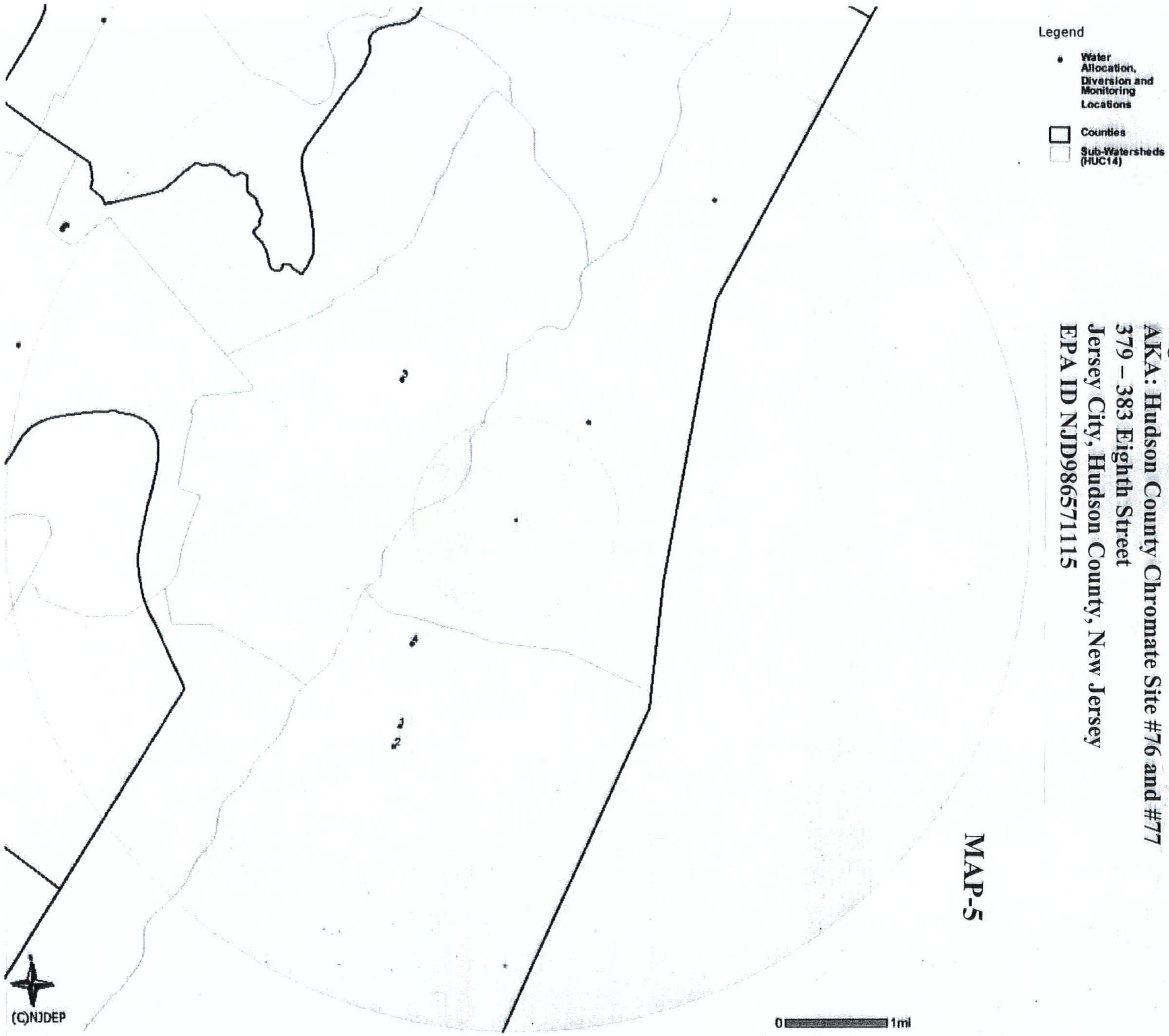
Hudson County Road Map
Geographia Map Company (2005)

100,000 GPD WATER WITHDRAWAL POINTS WITHIN 5 Miles OF :
X : 616608
Y : 690040

SCALE : 1 : 63,360

PLOT PRODUCED BY :
NJDEP
WATER SUPPLY
BUREAU OF WATER ALLOCATION
P.O. Box 426
TRENTON, NJ 08625
DATE : 9/20/2010

SUBJECT TO REVISION



Eighth Street Site
AKA: Hudson County Chromate Site #76 and #77
379 – 383 Eighth Street
Jersey City, Hudson County, New Jersey
EPA ID NJD986571115

MAP-5

Welcome

Corporate Documents

Personal Documents

Inbox Documents

Create Documents

Search

Options

Logout

Help

Show in i-Map Download Drill Refresh Edit Save Send

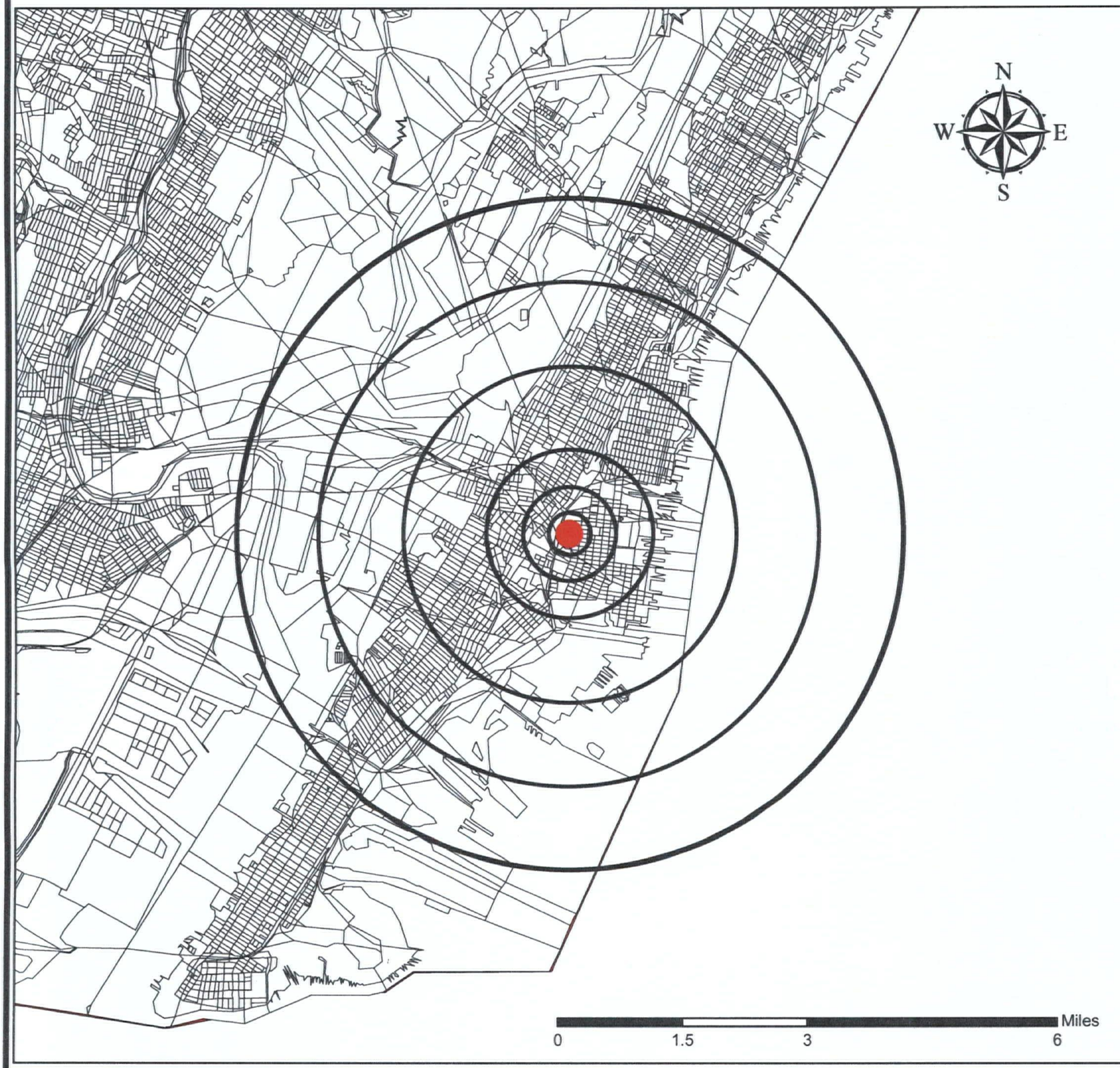
Last refresh: 9/20/2010 02:18:32 PM

Withdrawal Points Tabular Data (SRP)

Sequence Number	PI ID Number (Preferred NJEMS ID)	PI Name	Activity Number	SI Category Code	SI Designation	SI Description	Distance from X/Y Origin (mi.)	County Code (Location Point)	Municipality - Code (Location Point)	SPC83X	SPC83Y	XY Accuracy + Units Code	Dep to Top of Open Interval + Units	Dep To Btm of Open Interval + Units	Z (Elevation)	Z Accuracy + Units Code	Geologic Unit	Hydrogeologic Unit	Rated Pump Capacity + Units Code	BRDGBWASI (BW
1	11277W	LIBERTY NATIONAL GOLF COURSE	WUR070001	WSIN	INTAKE 2	BASIN D (LINED) (CORRECTED)	2.31	09	06	610628.04	679392.16	100ft			19.8	5Feet			3200gm	
2	11277W	LIBERTY NATIONAL GOLF COURSE	WUR070001	WSIN	INTAKE 1	BASIN C (LINED) (CORRECTED)	2.52	09	06	610312.81	678346.44	100ft			9.8	5Feet			500gm	
4	11345W	PPG SITE 114	WUR100001	WSRM	DEWATERING/ TRENCH SOURCES	EXCAVATION TRENCH	1.58	09	06	611270.00	683620.00	50ft			20	10Feet	5100 Trl Lockatong Formation	lf Lockatong Formation	300gm	
3	1275D	PSEG FOSSIL LLC HUDSON GENERATING STATION	DWP080001	WSRM	DEWATER SYS	WELLS, TRENCHES, WELLPOINTS	1.76	09	06	610741.63	697253.52	100ft			5	20Feet	25 af Artificial fill	non-glacial surficial material	250gm	

Page 1

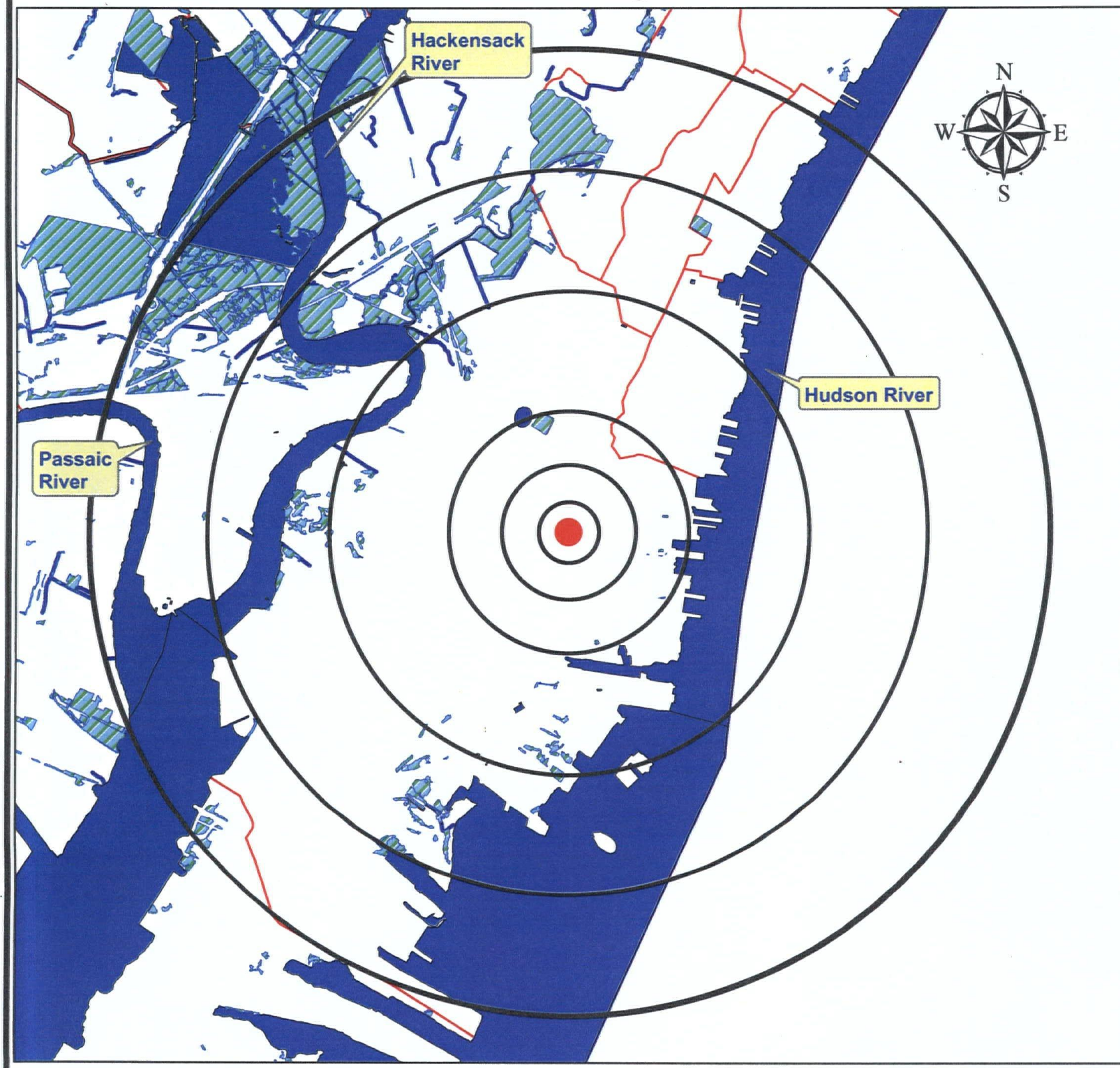
Map of Population* Rings
Centered at Eighth Street Site
AKA: Hudson County Chromate Sites #76 and #77
379 - 383 Eighth Street
Jersey City, Hudson County, New Jersey
Lat: 40.727215 Long: - 74.050938



Ring 1 (0.0 - 0.25)	has population	3,695
Ring 2 (0.25 - 0.50)	has population	15,175
Ring 3 (0.50 - 1.00)	has population	57,864
Ring4 (1.00 - 2.00)	has population	140,305
Ring 5 (2.00 - 3.00)	has population	90,471
Ring 6 (3.00 - 4.00)	has population	69,902

MAP-6

Map of Wetlands
Centered at Eighth Street Site
AKA: Hudson County Chromate Site #76 and #77
379 - 383 Eighth Street
Jersey City, Hudson County, New Jersey
Lat: 40.727215 Long: - 74.050938



Legend

- Lakes (detailed)
- Streams (detailed)
- Freshwater Wetlands 1995

Miles: 0, 1, 2, 4

MAP-7

MAP SCALE 1" = 500'

250 0 500 1000 FEET

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Eighth Street Site
AKA: Hudson County Chromate Sites #76 and #77
379-383 Eighth Street
Jersey City, Hudson County, New Jersey
EPA ID NJD986571115

Flood Insurance Rate Map
Hudson County, New Jersey
Map #34017C0106D
Panel 106 of 118
Effective Date August 16, 2006

MAP-8

PHOTOGRAPHS

^ Eight Street Site - Photo looking south from Eighth Street. Site #76 the 2-story gray Bldg. Site #77 is the brick Bldg. to the right

^ View of Site #76 (2-story Building) parking area located on property operated by GKY Industries, but not on the Eighth Street Site

^ Photograph of MW03

^ Photograph taken within the warehouse of GKY Industries at 383 Eighth Street. MW01 visible in photo

ATTACHMENT A

Search Superfund Site Information

EIGHTH STREET SITE

Site Information

Site Info | Aliases | Operable Units | Contacts
Actions | Contaminants | Site-Specific Documents

Site Name: EIGHTH STREET SITE
Street: 379-383 EIGHT STREET
City / State / ZIP: JERSEY CITY, NJ 07302

NPL Status: Not on the NPL
Non-NPL Status: Site Reassessment Ongoing

ERS Exclusion: An Eligible Response Site (ERS) Exclusion decision has been made at this site.

EPA ID: NJD986571115
EPA Region: 02
County: HUDSON

Federal Facility Flag: Not a Federal Facility

Return to Search Results **Return to Search Superfund Site Informati**

http://oaspub.epa.gov/enviro/lrt_viewer.map_page?sys_id=110009300470
Last updated on Monday, September 20, 2010

Locational Reference Tables (LRT)

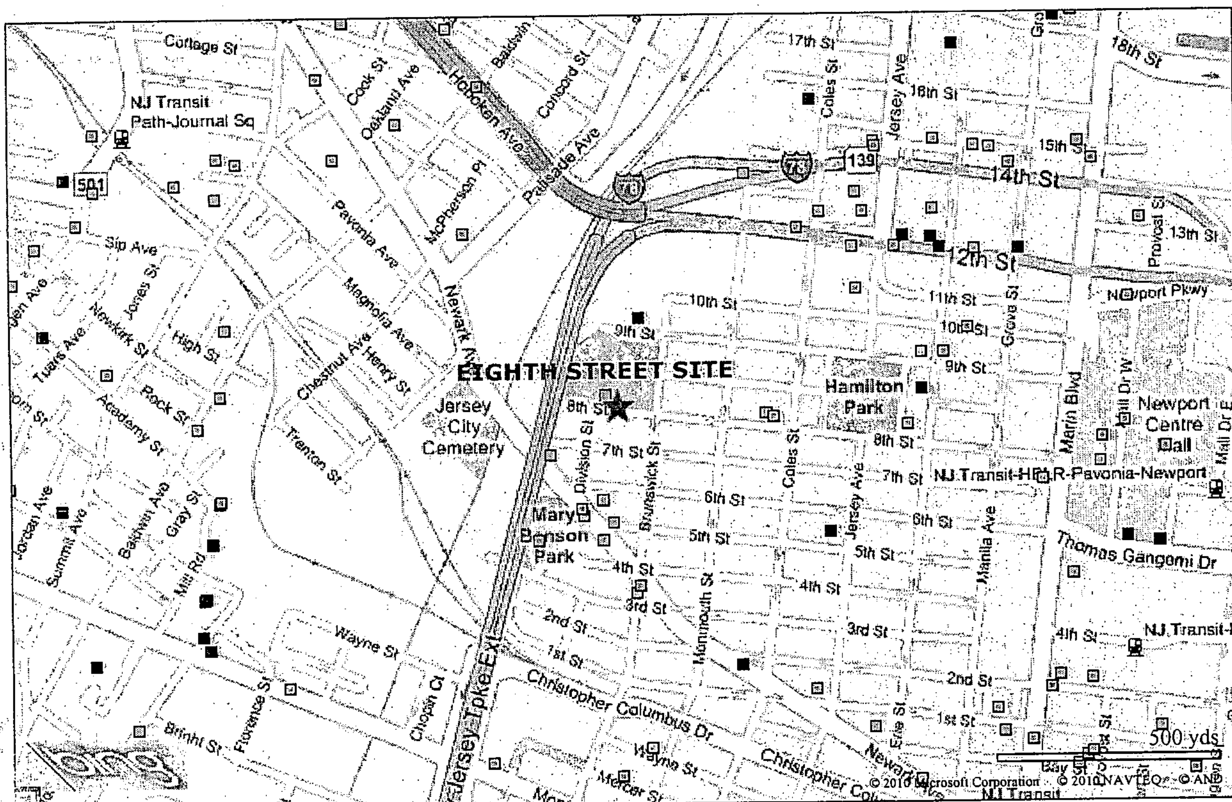
You are here: EPA Home Envirofacts FRS Location Information

Facility Location Information

Report an Error

Locational Information

EIGHTH STREET SITE
379-383 EIGHT STREET
JERSEY CITY NJ 07302
Latitude: 40.727411 Longitude: -74.050971



Legend
- ★ Selected facility
- ■ Multi-activities
- ▣ Superfund
- ▣ Toxic releases
- ▣ Water dischargers
- ■ Air emissions
- ▣ Hazardous waste

The latitude and longitude coordinates above come from the Envirofacts Locational Reference Tables (LRT). The method used to derive the Most Accurate Coordinates was ADDRESS MATCHING-HOUSE NUMBER. These coordinates correspond to N/A and represent the best location for the facility.

Query executed on SEP-20-2010

http://iaspub.epa.gov/enviro/cerclis_web.report?pgm_sys_id=NJD986571115
Last updated on Monday, September 20, 2010

Superfund (CERCLIS)

You are here: EPA Home Envirofacts CERCLIS Query Results

Query Results

Report an Error

CERCLIS

Site ID: Equal To: NJD986571115

Results are based on data extracted on AUG-26-2010

Note: Click on the underlined CORPORATE LINK value for links to that company's environmental web pages.
Click on the underlined MAPPING INFO value to obtain mapping information for the facility.
Click on the underlined RECORD OF DECISION value for a RODS Site Report.
Click on the underlined "View Facility Information" link to view EPA Facility information for the facility.

Go To Bottom Of The Page

CERCLIS EPA ID:	NJD986571115	**SITE NAME:**	EIGHTH STREET SITE
STREET ADDRESS:	379-383 EIGHT STREET	**FACILITY INFORMATION**	View facility information
CITY NAME:	JERSEY CITY		
STATE ABBR:	NJ	**FEDERAL FACILITY:**	N
ZIP CODE:	07302	**NPL STATUS:**	Not on the NPL
COUNTY NAME:	HUDSON		
CORPORATE LINK:	No	**RECORD OF DECISION (ROD) INFO:**	No
LATITUDE:		**EPA REGIONAL LINK:**	No
LONGITUDE:		**MAPPING INFO:**	MAP
SITE SMSA:	3640		

Enforcement and Cleanup Actions

Action	Action ID	Actual Start Date	Actual End Date	Responsibility	Planned Outcome	Urgency
PRELIMINARY ASSESSMENT	001	03/24/1989	06/24/1989	EPA Fund-Financed	Low priority for further assessment	
DISCOVERY	001		03/13/1989	EPA Fund-Financed		

Site Description

There were no Site Descriptions reported for this site.

Below is additional information for CERCLIS sites:

This information resource is not maintained, managed, or owned by the Environmental Protection Agency (EPA) or the Envirofacts Support Team. Neither the EPA nor the Envirofacts Support Team is responsible for their content or site operation. The Envirofacts Warehouse provides this reference only as a convenience to our Internet users.

ATTACHMENT B

02-8904-06-PA
REV. NO. 0

FINAL DRAFT
PRELIMINARY ASSESSMENT
EIGHTH STREET SITE
JERSEY CITY, NEW JERSEY

PREPARED UNDER

TECHNICAL DIRECTIVE DOCUMENT NO. 02-8904-06
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

JUNE 9, 1989

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY:

RICHARD FEINBERG
PROJECT MANAGER

EDMUND KNYFD JR.
SITE MANAGER

REVIEWED/APPROVED BY:

RONALD M. NAMAN
FIT OFFICE MANAGER

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT

PART I: SITE INFORMATION

1. **Site Name/Alias** Eighth Street Site/aka G. K. Yedibalian Inc. Hardware Shop/aka Modern Village Development Corp.

   Street 379-383 Eighth Street

   City Jersey City **State** New Jersey **Zip** 07302

2. **County** Hudson **County Code** 17 **Cong. Dist.** 14

3. **EPA ID No.** NJD982274250

4. **Latitude** 40° 43′ 37″N **Longitude** 74° 03′ 05″W

   USGS Quad. Jersey City, New Jersey

5. **Owner** Carl Yedibalian **Tel. No.** (201) 656-2377

   Street 377 Eighth Street

   City Jersey City **State** New Jersey **Zip** 07302

6. **Operator** Carl Yedibalian/Modern Village Development Corp. **Tel. No.** (201) 656-2377

   Street 377 Eighth Street

   City Jersey City **State** New Jersey **Zip** 07302

7. **Type of Ownership**

   ☒ Private ☐ Federal ☐ State
   ☐ County ☐ Municipal ☐ Unknown ☐ Other ______

8. **Owner/Operator Notification on File**

   ☐ RCRA 3001 Date ______ ☐ CERCLA 103c Date ______
   ☐ None ☒ Unknown

9. **Permit Information**

Permit	Permit No.	Date Issued	Expiration Date	Comments
Unknown				

10. **Site Status**

    ☒ Active ☐ Inactive ☐ Unknown

11. **Years of Operation** Unknown to Present

12. Identify the types of waste units (e.g., landfill, surface impoundment, piles, stained soil, above- or below-ground tanks or containers, land treatment, etc.) on site. Initiate as many waste unit numbers as needed to identify all waste sources on site.

(a) Waste Management Areas

Waste Unit No.	Waste Unit Type	Facility Name for Unit
1	Fill	Fill
2	Sump Area	Sump

(b) Other Areas of Concern

Identify any miscellaneous spills, dumping, etc. on site; describe the materials and identify their locations on site.

On January 25, 1989, Ms. Patti-Lynn Neilan authored a letter to the EPA requesting that a preliminary assessment be done on this site because of alleged uncontrolled dumping of soil and construction debris. The exact composition of the debris and its location on site are not known, but the material is believed to be trash, construction debris, and soil.

In March 1987 the concrete floor in the warehouse at 383 Eighth Street was removed. At this time it was noted that the slabs of concrete had yellow staining on their undersides. The concrete debris and soil were placed on the adjacent vacant lot at 381 Eighth Street. The waste, classified by the State of New Jersey Department of Environmental Protection as ID No. 27, was properly containerized in five 55-gallon drums and manifested off site on February 26, 1988. It is believed that this site may contain chromium-contaminated fill. Mr. Tex Aldredge of the Jersey City Health Division (JCHD) inspected the new concrete floor and noticed that the concrete block walls of the facility were stained with various colors and showed evidence of crystal growth. Crystal growth was also noticed along the sides of the sump area in the warehouse. Mr. Aldredge requested that the crystalline material be removed and a sealant be applied to the walls to prevent further "wicking" of contaminants from the soil. An EP toxicity test performed on the crystalline substance from the warehouse verified the presence of chromate. An air sampling program was performed at the warehouse, and the results showed no detection of chromium.

13. Information available from

Contact Amy Brochu — Agency U.S. EPA — Tel. No. (201) 906-6802

Preparer Edmund Knyfd Jr. — Agency NUS Corp. Region 2 FIT — Date 6/30/89

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following six items.

Waste Unit 1 - Fill Fill

1. **Identify the RCRA status and permit history, if applicable, and the age of the waste unit.**

   The RCRA status and permit history, if any, are unknown. Some time between March 1987 and March 1988 Mr. Yedibalian applied for and received an EPA ID Number to remove the chromium-contaminated soil dumped at 381 Eighth Street. On March 18, 1988, he requested that the site be reclassified as it no longer needed the ID number. The age of the waste unit is unknown, but estimated to be a few years old.

2. **Describe the location of the waste unit and identify clearly on the site map.**

   From the off-site reconnaissance report it can be determined that the waste unit is the entire lot since the soil, construction debris, and trash are scattered all over the entire lot.

3. **Identify the size or quantity of the waste unit (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.**

   From the tax map it is estimated that the size of the waste unit is 2,500 to 7,500 ft^2 consisting of three lots, each of which measures 25 by 100 feet in size. Five 55-gallon drums of hazardous substances were manifested off site on February 26, 1988.

4. **Identify the physical state(s) of the waste type(s) as disposed of in the waste unit. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid, or gas.**

   The physical state of the waste type as disposed of in the waste unit can be categorized as solid, consisting of concrete, trash, and potentially chromium-contaminated soil.

5. **Identify specific hazardous substance(s) known or suspected to be present in the waste unit.**

   The specific hazardous substance suspected to be present in the waste unit is chromium. An air sampling report conducted for this site as part of the Hudson County Chromium Sampling Project stated that the warehouse building was originally constructed on a site which was suspected of containing chromium-contaminated fill.

6. **Describe the containment of the waste unit as it relates to contaminant migration via groundwater, surface water, and air.**

   Evidence gathered during the off-site reconnaissance indicates that there appear to be no containment measures of any type. There is a potential for contaminant migration via groundwater by way of downward percolation of rainwater through the soil to the groundwater. There is a potential for contaminant migration via surface water when heavy rainfall overflows the local storm sewer system, at which time surface runoff would migrate east down the streets, and into the Hudson River at Harsimus Cove. Contaminant migration via an air route is of concern to the area residents and could occur because the potentially chromium-contaminated soil is unprotected from the wind.

Ref. Nos. 1, 6, 18, 22, 23

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following six items.

Waste Unit 2 - Sump Area Sump

1. **Identify the RCRA status and permit history, if applicable, and the age of the waste unit.**

   The RCRA status and permit history, if any, are unknown. The age of this waste unit is unknown, but estimated to be a few years old.

2. **Describe the location of the waste unit and identify clearly on the site map.**

   The sump is located in the floor of the warehouse facility at 383 Eighth Street.

3. **Identify the size or quantity of the waste unit (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.**

   The size and quantity of the waste unit are unknown. The specific quantities of hazardous substances in the waste unit are unknown, but the substances are observed to be crystal growth on the sides of the sump.

4. **Identify the physical state(s) of the waste type(s) as disposed of in the waste unit. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid, or gas.**

   The physical state of the waste type as disposed of in the waste unit can be categorized as solid, in the form of crystals.

5. **Identify specific hazardous substance(s) known or suspected to be present in the waste unit.**

   The specific hazardous substance suspected to be present in the waste unit is chromium, attributable to suspected chromium-contaminated fill underneath the warehouse facility at 383 Eighth Street.

6. **Describe the containment of the waste unit as it relates to contaminant migration via groundwater, surface water, and air.**

   It is believed that the sump area is sunken and completely surrounded by the concrete floor. If the sump area is used as a collection area for water, it is possible for contaminants to migrate from the surrounding soil into the sump area. This is evidenced by observed crystal growth on the sides of the sump area, which could represent the potential for contaminant migration via groundwater. There might be a possibility for contaminant migration via surface water if the sump area were to overflow, allowing water to flow onto the floor and possibly out of the warehouse facility into the street and city sewer system. The potential for contaminant migration via an air route is believed to be low since the suspected hazardous substance has been observed as crystals on the sides of the sump area.

Ref. Nos. 22, 23

PART III: HAZARD ASSESSMENT

GROUNDWATER ROUTE

1. **Describe the likelihood of a release of contaminant(s) to the groundwater as follows: observed, alleged, potential, or none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminant(s) to the facility.**

There has been no observed or alleged release of contaminants to the groundwater. However, the potential for groundwater contamination does exist because it appears that there is no containment of the waste debris piles. The suspected contaminant is believed to be chromium-contaminated soil removed from underneath the warehouse floor at 383 Eighth Street and dumped on the adjacent vacant lot at 381 Eighth Street. There is also concern that chromium-contaminated soil may have been used as fill on the site. There could also be a potential for a release of contaminants to the groundwater in the sump area of the warehouse facility, as evidenced by yellow crystal growth on the sides of the sump area. The suspected contaminant is chromium.

Ref. Nos. 1, 2, 20, 21, 22

2. **Describe the aquifer of concern; include information such as depth, thickness, geologic composition, permeability, overlying strata, confining layers, interconnections, discontinuities, depth to water table, groundwater flow direction.**

In Jersey City the aquifer of concern is the Triassic Age Brunswick Formation of the Newark Group. The beds of the Newark Group generally strike in a northeast-southwest direction and dip gently to the northwest at approximately 10 degrees. The Brunswick Formation, estimated to be about 6,000 to 7,000 feet thick in the Newark area just south of the Hackensack River basin, is composed of reddish-brown shale, sandstone, siltstone, conglomerate, and intervening beds of basalt and diabase. Overlying the Brunswick Formation in some areas are Pleistocene Age glacial deposits. These glacial deposits typically consist of sand, gravel, clay, and silt, and are commonly classified as till or stratified drift. The till is generally an unsorted mixture of gravel, sand, silt, and clay, whereas the stratified drift consists of poorly to well sorted sand, gravel, clay, and silt. Locally, where these deposits do exist, they are believed to range in thickness from a few feet up to 50 feet. The Brunswick Formation is of generally poor permeability; however, systems of cracks and fractures can yield appreciable amounts of water in the direction parallel to the strike of the formation beds. Stratified drift deposits are commonly in direct hydraulic connection with the Brunswick Formation, and are a zone of recharge to the formation. Wells in the Brunswick Formation yield water at depths less than 200 feet to as much as 600 feet, with the most productive range being from 200 to 400 feet deep. Groundwater flow is believed to be parallel to the northeast-southwest strike of the formation beds, but heavy industrial pumpage is probably reversing the natural groundwater flow and inducing poor-quality water from the Hackensack River into the aquifer. There is very little useful well information for Jersey City and Hudson County, but available information indicated that a well, located less than 0.25 mile from the site, was drilled to a depth of 99 feet and did not yield water.

Ref. Nos. 4, 28

3. **Is a designated sole source aquifer within 3 miles of the site?**

No, a designated sole source aquifer is not within 3 miles of the site.

Ref. No. 5

4. **What is the depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer of concern?**

It is believed that the waste disposal/storage is the first few feet, in depth, of soil present on site. The depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer of concern cannot be determined from the available well information; however, a well located approximately 1 block north of the site was drilled to a depth of 99 feet and did not yield water. It is estimated that the groundwater level is deeper than 99 feet.

Ref. Nos. 18, 22, 23, 27

5. **What is the permeability value of the least permeable continuous intervening stratum between the ground surface and the aquifer of concern?**

The estimated permeability value of the least permeable continuous intervening stratum between the ground surface and the aquifer of concern is 10^{-3}-10^{-5} cm/sec for stratified drift.

Ref. No. 7

6. **What is the net precipitation for the area?**

The net precipitation for the area is 14 inches annually.

Ref. No. 7

7. **Identify uses of groundwater within 3 miles of the site (i.e., private drinking source, municipal source, commercial, industrial, irrigation, unusable).**

In Hudson County and the Jersey City area, tidal flooding of the Meadowlands and the high chloride content of the Hackensack River greatly influence the local groundwater quality and make it unsuitable for most municipal and industrial processes except cooling.

Ref. Nos., 4 p. 29; 6

8. **What is the distance to and depth of the nearest well that is currently used for drinking or irrigation purposes?**

There are no wells used for drinking or irrigation purposes within 3 miles of the site. A well located approximately 1 block north of the site was drilled to a depth of 99 feet and yielded no water.

Distance NA **Depth** NA

Ref. Nos. 3, 27

9. **Identify the population served by the aquifer of concern within a 3-mile radius of the site.**

There is no population served by the aquifer of concern within a 3-mile radius of the site. Due to the poor quality of the groundwater, all residents of Jersey City receive their drinking water from distant water supplies such as the Boonton and Wanaque Reservoirs. A portion of the population within a 3-mile radius of the site resides in Manhattan, New York. This population receives its drinking water from the New York City Aqueduct System, which consists of lakes and reservoirs in Westchester, Putnam, Ulster, Schoharie, Delaware, and Sullivan counties.

Ref. Nos. 3; 4, pp. 28-29; 6; 8; 9; 10; 11

SURFACE WATER ROUTE

10. **Describe the likelihood of a release of contaminant(s) to surface water as follows: observed, alleged, potential, or none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminants to the facility.**

There has been no observed or alleged release of contaminants to surface water attributable to this site. However, a small potential does exist for contaminants to migrate to surface water (Hudson River) when the city sewer systems become flooded during periods of heavy rainfall, causing surface water runoff into the Hudson River. The substances found on site include trash, construction debris, and potentially chromium-contaminated soil.

Ref. Nos. 2; 4, pp. 26 and 52

11. **Identify and locate the nearest downslope surface water. If possible, include a description of possible surface drainage patterns from the site.**

The nearest downslope surface water would be the Hudson River at Harsimus Cove. It appears that surface water drainage patterns from the site would go to street sewers, on to a treatment plant, and then discharge into the Hudson River. During periods of heavy rainfall the street sewers become flooded, and surface water runoff is into the Hudson River.

Ref. Nos. 4 pp. 26 and 52; 6; 19

12. **What is the facility slope in percent? (Facility slope is measured from the highest point of deposited hazardous waste to the most downhill point of the waste area or to where contamination is detected.)**

The facility slope, estimated from the 3-mile radius map, appears to be less than 1 percent. During the off-site reconnaissance it was noted that the slope of the site was gentle, away from Eighth Street to the south.

Ref. Nos. 6, 18

13. **What is the slope of the intervening terrain in percent? (Intervening terrain slope is measured from the most downhill point of the waste area to the probable point of entry to surface water.)**

The intervening terrain slope, estimated from the 3-mile radius map, appears to be less than 1 percent.

Ref. No. 6

14. **What is the 1-year 24-hour rainfall?**

The 1-year 24-hour rainfall for this area is 2.8 inches.

Ref. No. 7

15. **What is the distance to the nearest downslope surface water? Measure the distance along a course that runoff can be expected to follow.**

The distance to the nearest downslope surface water is approximately 4500 feet east to the Hudson River.

Ref. No. 6

16. **Identify uses of surface waters within 3 miles downstream of the site (i.e., drinking, irrigation, recreation, commercial, industrial, not used).**

In the Jersey City area surface water within 3 miles downstream of the site is subject to tidal influence. The Hudson River and upper Newark Bay are used for commercial shipping and some secondary contact recreation such as boating. The Hackensack River is generally unused and not fishable due to restrictions imposed by the New Jersey Department of Environmental Protection. These waters have been classified by the State of New Jersey Department of Environmental Protection, Division of Water Resources to be used for, among other things, the maintenance and migration of diadromous fish.

Ref. Nos. 12, 13, 24, 25, 26

17. **Describe any wetlands, greater than 5 acres in area, within 2 miles downstream of the site. Include whether it is a freshwater or coastal wetland.**

Because surface water in the area is tidal, consideration should be given to wetlands upstream and downstream of the site. There are no wetlands within 2 miles upstream or downstream of the site. However there is a tidal flat approximately 2.5 miles south of the site, and a portion of the Hackensack Meadowlands is within a 3-mile radius of the site.

Ref. Nos. 6, 14

18. **Describe any critical habitats of federally listed endangered species within 2 miles of the site along the migration path.**

Because surface water in the area is tidal, consideration should be given to critical habitats of federally listed endangered species upstream and downstream of the site. There are no critical habitats of federally listed endangered species within 2 miles of the site along the migration path. However, the Hackensack River and Meadowlands are a refuge and nursery area for several important recreational and commercial fish species, including two fish species listed as threatened by the State of New Jersey.

Ref. Nos. 6, 15, 24

19. **What is the distance to the nearest sensitive environment along or contiguous to the migration path (if any exist within 2 miles)?**

Because the surface water in the area is tidal, consideration should be given to sensitive environments upstream and downstream of the site. There are no sensitive environments within 2 miles upstream or downstream of the site; however, a tidal flat exists 2.5 miles downstream of the site, and a portion of the Hackensack Meadowlands is within a 3-mile radius of the site.

Ref. Nos. 6, 14, 15

20. **Identify the population served or acres of food crops irrigated by surface water intakes within 3 miles downstream of the site and the distance to the intake(s).**

No surface water intakes exist within 3 miles downstream or upstream of the site.

Ref. Nos. 16

21. **What is the state water quality classification of the water body of concern?**

The water bodies of concern, the Upper Newark Bay, the Hackensack River, the Meadowlands, and the Hudson River have state water quality classifications of S3, S2, S2, and S2, respectively.

Ref. Nos 12, 13

22. **Describe any apparent biota contamination that is attributable to the site.**

No apparent biota contamination has been attributed to this site.

Ref. Nos. 1, 18

AIR ROUTE

23. **Describe the likelihood of a release of contaminant(s) to the air as follows: observed, alleged, potential, none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminant(s) to the facility.**

No observed or alleged release of contaminants to the air has been attributed to this site. It is believed that a potential does exist for the wind to carry contaminated dust off site. The area residents are also concerned that potentially chromium-contaminated dust from the site may be blowing into their residences.

Ref. Nos. 1, 2, 22, 23

24. **What is the population within a 4-mile radius of the site?**

The population within a 4-mile radius of the site is 774,600. A portion of this area includes Manhattan, NY.

Ref. Nos. 6, 17

FIRE AND EXPLOSION

25. **Describe the potential for a fire or explosion to occur with respect to the hazardous substance(s) known or suspected to be present on site. Identify the hazardous substance(s) and the method of storage or containment associated with each.**

The potential for a fire or explosion to occur is believed to be nonexistent because the only suspected substances on site are trash, construction debris, and potentially chromium-contaminated soil. There is no evidence of any method of storage or containment associated with these substances.

Ref. Nos. 1, 18, 20, 21, 22, 23

26. **What is the population within a 2-mile radius of the hazardous substance(s) at the facility?**

The population within a 2-mile radius of the hazardous substances at the facility is 199,700.

Ref. No. 17

DIRECT CONTACT/ON-SITE EXPOSURE

27. **Describe the potential for direct contact with hazardous substance(s) stored in any of the waste units on site or deposited in on-site soils. Identify the hazardous substance(s) and the accessibility of the waste unit.**

The potential for direct contact is extremely low since the site is enclosed by a high chain link fence with a locked gate. The suspected hazardous substance on site is potentially chromium-contaminated soil.

Ref. Nos. 18, 20, 21, 22, 23

28. How many residents live on a property whose boundaries encompass any part of an area contaminated by the site?

From photographs taken during the off-site reconnaissance it is estimated that approximately 100 residents live on property whose boundaries border the southern boundary of the site.

Ref. No. 18 photographs P. 20 and P. 22

29. What is the population within a 1-mile radius of the site?

The population within a 1-mile radius of the site is 69,000.

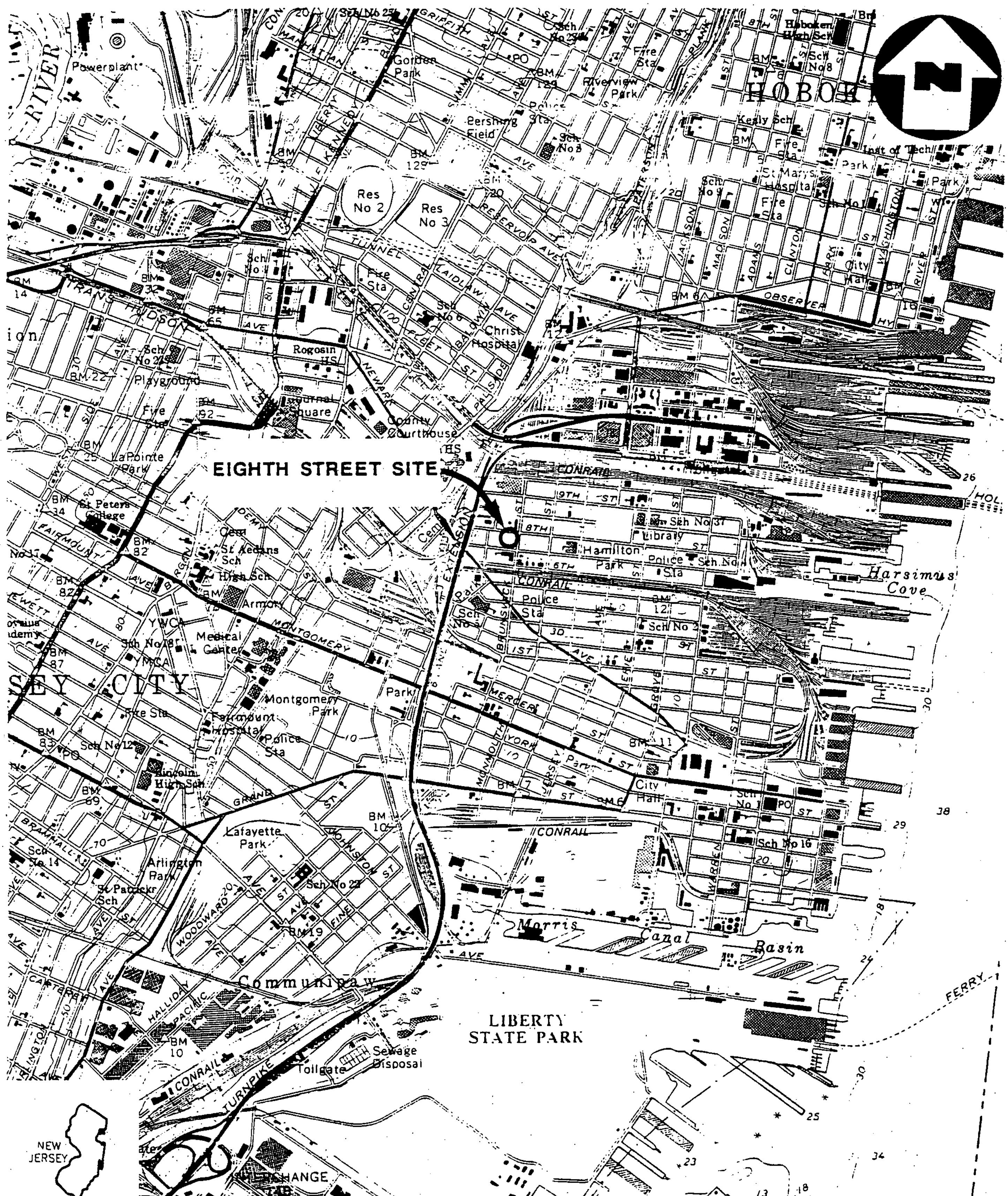
Ref. No. 17

PART IV: SITE SUMMARY AND RECOMMENDATIONS

The Eighth Street Site consists of three lots that have a combined area of 7500 ft^2 and occupy the addresses of 379, 381, and 383 Eighth Street in Jersey City, Hudson County, New Jersey. The site is located in an urban residential area where houses border the southern boundary of the site, and across the street, north of the site, are the E.F. Jones Park and Jack De Salvo Memorial Playground.

In March 1987 the owner, Carl Yedibalian, replaced the existing concrete floor within his warehouse facility located at 383 Eighth Street. It is believed that the warehouse facility was originally constructed on a site which was suspected of containing chromium-contaminated fill material. During the replacement of the concrete floor in the warehouse it was noticed that the original slabs had yellow staining on the underside. While awaiting waste classification and disposal, the concrete debris was placed on the vacant lot at 381 Eighth Street and covered with plastic. The waste, classified by the State of New Jersey Department of Environmental Protection as ID No. 27, was properly containerized in five 55-gallon drums and manifested off site on February 26, 1988. After the new concrete floor was constructed, Mr. Aldredge of the Jersey City Health Division (JCHD) inspected the facility and noticed that the concrete block walls within the facility were stained with various colored materials and showed some evidence of crystal growth. Mr. Aldredge requested that an air sampling plan be developed to determine the presence of chromium particulates in the facility. Mr. Aldredge requested that the crystalline material be removed and a sealing material sprayed on the walls to prevent further "wicking" of contaminants from the soil underneath the floor. An EP Toxicity test on the leaching crystalline substance verified that chromate was present. An air sampling plan and foundation sealing plan were submitted to Mr. Aldredge (JCHD) for his review and comment. On July 7, 1987, after a meeting with all concerned parties it was agreed to implement the air sampling plan and to seal the walls after the results of analysis were available. The air sampling was performed at three locations in the warehouse: the office area, the back of the warehouse (proposed stock area), and the front of the warehouse (proposed shipping area). Results of the air sampling indicated no detection of chromium.

Area residents have expressed concern that there may still be residual chromium contamination at the site attributable to soil removed from underneath the concrete floor in the warehouse at 383 Eighth Street and dumped on the adjacent lot at 381 Eighth Street, and from soil that may have been used for fill at the site. Based on the confirmed human carcinogenic status of hexavalent chromium, and the close proximity of this site to residences and public playgrounds, a **MEDIUM PRIORITY** site inspection is recommended. Soil sampling should be conducted on the site to determine the extent of any possible chromium contamination. Also, air sampling should be performed around the perimeter of the site to determine if contaminants are migrating off site via an air route.



(QUAD) JERSEY CITY, N.J.-N.Y.

FIGURE 1

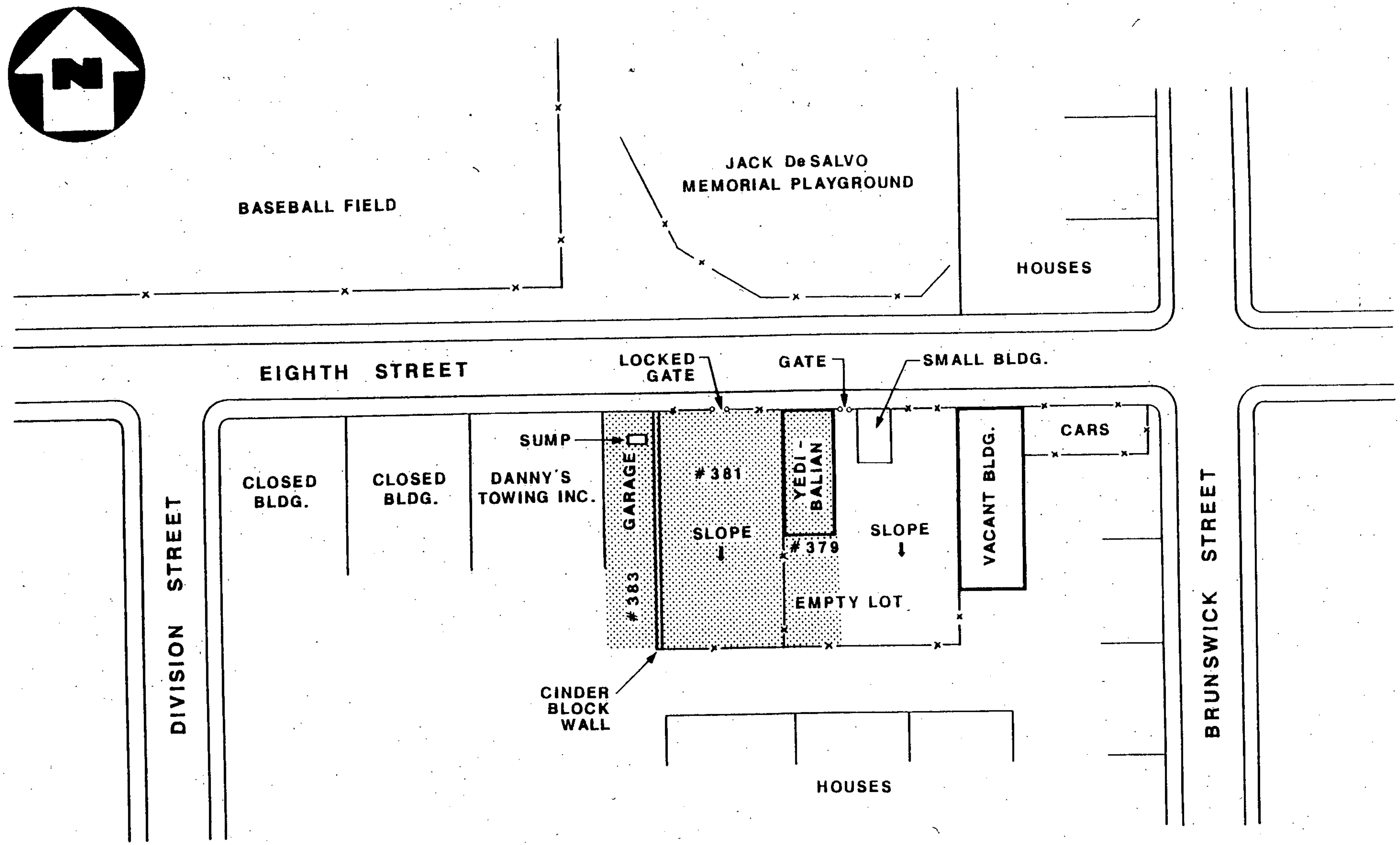
SITE LOCATION MAP

EIGHTH STREET SITE, JERSEY CITY, N.J.

SCALE: 1" = 2000'

NUS CORPORATION

17



LEGEND

SITE PROPERTY

SITE MAP

EIGHTH STREET SITE, JERSEY CITY, N.J.

NOT TO SCALE

FIGURE 2

NUS CORPORATION

Rev. No. 0

PART IV: SITE SUMMARY AND RECOMMENDATIONS

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1. United States Environmental Protection Agency, Region II, Preliminary Assessment Request from Dennis Santella, Chief, Technical and Pre-Remedial Support Section, to Amy Brochu, FIT-RPO Superfund Support Section, March 13, 1989.

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ATTACHMENT C

Block:	417	Prop Loc:	383 EIGHTH ST.	Owner:	MODERN VILLAGE DVLPT.CORP.	Square Ft:	0
Lot:	28	District:	0906 JERSEY CITY	Street:	P.O.BOX 448	Year Built:	1963
Qual:		Class:	4B	City State:	JERSEY CITY, N.J. 07303	Style:	

Additional Information

Prior Block:		Acct Num:	00049619	Addl Lots:		EPL Code:	0 0 0
Prior Lot:		Mtg Acct:		Land Desc:	25X100	Statute:	
Prior Qual:		Bank Code:	0	Bldg Desc:	1S-B-CB-G-O-H	Initial:	000000 Further: 000000
Updated:	04/04/08	Tax Codes:		Class4Cd:	0	Desc:	
Zone:		Map Page:	0302	Acreage:	0.0574	Taxes:	1082.24 / 884.26

Sale Information

Sale Date: 10/14/88 Book: 4063 Page: 294 Price: 0 NU#: 0

Sr1a	Date	Book	Page	Price	NU#	Ratio	Grantee

TAX-LIST-HISTORY

Year	Owner Information	Land/Imp/Tot	Exemption	Assessed
2010	MODERN VILLAGE DVLPT.CORP.	12500	0	31200
	P.O.BOX 448	18700		
	JERSEY CITY, N.J. 07303	31200		
2009	MODERN VILLAGE DVLPT.CORP.	12500	0	31200
	P.O.BOX 448	18700		
	JERSEY CITY, N.J. 07303	31200		
2008	MODERN VILLAGE DVLPT.CORP.	12500	0	31200
	P.O.BOX 448	18700		
	JERSEY CITY, N.J. 07303	31200		
2007	MODERN VILLAGE DVLPT.CORP.	12500	0	31200
	P.O.BOX 448	18700		
	JERSEY CITY, N.J. 07303	31200		

Block:	417	Prop Loc:	379-381 EIGHTH ST.	Owner:	M & S. EIGHTH ST.CORP.	Square Ft:	0
Lot:	33	District:	0906 JERSEY CITY	Street:	P.O.BOX 448	Year Built:	1991
Qual:		Class:	4B	City State:	JERSEY CITY, N.J. 07303	Style:	

Additional Information

Prior Block:		Acct Num:	00489781	Addl Lots:		EPL Code:	0 0 0
Prior Lot:		Mtg Acct:		Land Desc:	50X100	Statute:	
Prior Qual:		Bank Code:	0	Bldg Desc:	2S-CB-IN-H	Initial:	000000 Further: 000000
Updated:	04/04/08	Tax Codes:		Class4Cd:	0	Desc:	
Zone:		Map Page:	0302	Acreage:	0.1148	Taxes:	9539.06 / 7793.89

Sale Information

Sale Date: 04/08/94 Book: 4765 Page: 173 Price: 0 NU#: 0

Sr1a	Date	Book	Page	Price	NU#	Ratio	Grantee

TAX-LIST-HISTORY

Year	Owner Information	Land/Imp/Tot	Exemption	Assessed
2010	M & S. EIGHTH ST.CORP.	25000	0	275000
	P.O.BOX 448	250000		
	JERSEY CITY, N.J. 07303	275000		
2009	M & S. EIGHTH ST.CORP.	25000	0	275000
	P.O.BOX 448	250000		
	JERSEY CITY, N.J. 07303	275000		
2008	M & S. EIGHTH ST.CORP.	25000	0	275000
	P.O.BOX 448	250000		
	JERSEY CITY, N.J. 07303	275000		
2007	M & S. EIGHTH ST.CORP.	25000	0	275000
	P.O.BOX 448	250000		
	JERSEY CITY, N.J. 07303	275000		

ATTACHMENT D

Case Summary Report

PI Name

HUDSON COUNTY CHROMATE 77

County	Hudson
Municipality	Jersey City
Address	383 8TH ST
BFO File No :	
Lead Case Manager	Sanders, Luis
Geologist	
Technical Coordinator	

Pref ID

G000008704

Alternate ID Type	Alternate ID
CASE ID	HCC77
CASE ID	M400
CSL ID NUMBER	NJL000000778
DIFF	090600964001
GEDI ID	G000008704

Incidents

Classification Exception Area (CEA)	None
CEA Status Date	
Deed Notice	None
Deed Notice Date	
Engineering Controls	None
Engineering Controls Status Date	
Immediate Environmental Concern (IEC)	None
IEC Status Date	

Case Name	**HUDSON COUNTY CHROMATE 77**
Document Title	HCC 77 8TH ST #2
Document Status	Active
Document Status Date	1/10/2005
Activity Number	PFR050001
Activity Type	Remedial Investigation

Remedial Level	C2: Formal Design - Known Source or Release with GW Contamination
Start Date	4/1/1992

Primary Contact	SANDERS, LUIS
Primary Contact Phone Number	(609) 292 - 1762

Case Manager Name	SANDERS, LUIS
Case Manager Bureau	BCM
Case Manager Phone Number	(609) 292 - 1762

Last Task Completed	Last Task Completed Date

Case Types	Start Date
Chrome Site	11/15/1984
Publicly Funded	11/15/1984

Case Team History Report

PI Name

Pref ID

Activity#	Status	Status Date	Role	Staff Name	Bureau	Start Date	End Date

er Chrome Access Database an IRM has Not been conducted at this site. & " Should be assigned to RP Group. PPG willing to accept 1/3 responsibility (10/23/95 letter). .."

or the status of remediation at this site go to SRP PI G000009108 Hudson County Chromate - Public and look for activities with " Orphan Chrome SItes I" in the document title

Per Chrome Access Database an IRM has Not been conducted at this site. & " Should be assigned to RP Group. PPG willing to accept 1/3 responsibility (10/23/95 letter). .."

For the status of remediation at this site go to SRP PI G000009108 Hudson County Chromate - Public and look for activities with " Orphan Chrome SItes I" in the document title

ATTACHMENT E

WELCOME

GKY INDUSTRIES

At GKY INDUSTRIES....'We hear you'

About Us

Since its founding in 1953, GKY INDUSTRIES has been committed to customer service that is oriented toward YOUR needs and satisfaction. As a factory authorized master distributor, GKY INDUSTRIES provides a complete inventory of standards; fasteners, electrical connectors, hose & hydraulic fittings, cutting tools, abrasives, hand and power tools and other MRO, safety and shop related products. We also stock a large selection of non-standards, varying from odd diameter and length fasteners to specialty tools and accessories. With the long established relationships we have with our manufacturers, we can provide you custom-made specials to your requirements with improved lead times at an exceptional value.

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You can reach our warehouse, sales and showroom complex, located on 379-383 Eighth Street in Jersey City, New Jersey, from 8:00 A.M. to 5:00 P.M..

Contact any of our friendly sales representatives.

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Fax: (201) 656-0566

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www.biggestindustrialbook.com

Click on this link to view our fastener products: www.chicagohardware.com

ATTACHMENT F

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Gky Industries, G K Y Industries

383 8th Street
Jersey City, NJ 07302-1831 map
Jersey City, NJ Metro Area

Phone: (201) 656-2377
Website: Gkyindustries.com

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- Alert me if something changes
- Print this page

About Gky Industries

Is this your company? Claim This Profile

Gky Industries is a private company categorized under Wholesale Hardware and located in Jersey City, NJ. Current estimates show this company has an annual revenue of $5 to 10 million and employs a staff of approximately 10 to 19.

Manta Members Connected to this Company

Do you work here? Add this company to your member profile.

Gky Industries Business Information

Gky Industries also does business as G K Y Industries.

Location Type	Single Location
Annual Sales (Estimated)	$5 to 10 million
Employees (Estimated)	10 to 19 D&B: 20
SIC Code	507205, Fasteners-Industrial (Whls)
NAICS Code	423710, Hardware Merchant Whls
Products, Services and Brands	Information not found
State of Incorporation	Information not found
Years in Business	57

Business Categories

Fasteners-Industrial (Whls) in Jersey City, NJ
Whol Hardware
Hardware Merchant Whls
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Company Contacts

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Kevork C Yedibalian
President

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Wholesale Hardware in Jersey City, NJ

G K Yedibalian Inc
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G K Yedibalian Inc
Wholesale Hardware in Jersey City, NJ

Martin Luther King Hair
Wholesale Hardware in Jersey City, NJ

Click on the reports tab at the top of the page to research company background, detailed company profile, credit and financial reports for Gky Industries.
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Companies by Location: Jersey City, NJ

Business Topics
Small Business
Sales Expertise
Human Resources
Travel
Franchise
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Australia
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ATTACHMENT G

Google maps **child care** near **383 8th St, Jersey City, NJ 07302**

A. Our Little Rugratz **Day Care**
275 Newark Ave, Jersey City, NJ -
(201) 653-5580 - 0.3 mi S
13 reviews

B. Viaquenti Preschool
285 Newark Avenue, Jersey City, NJ -
(201) 217-8707 - 0.3 mi S
3 reviews

C. Future Star Daycare
123 Brunswick St, Jersey City, NJ -
(201) 876-9292 - 0.3 mi S

D. First Steps Daycare Center
285 newark ave, Jersey City, NJ -
(201) 216-9840 - 0.3 mi S
1 review

E. Hamilton Park Montessori
1 Mcwilliams Pl # 206, Jersey City, NJ -
(201) 533-1910 - 0.4 mi E

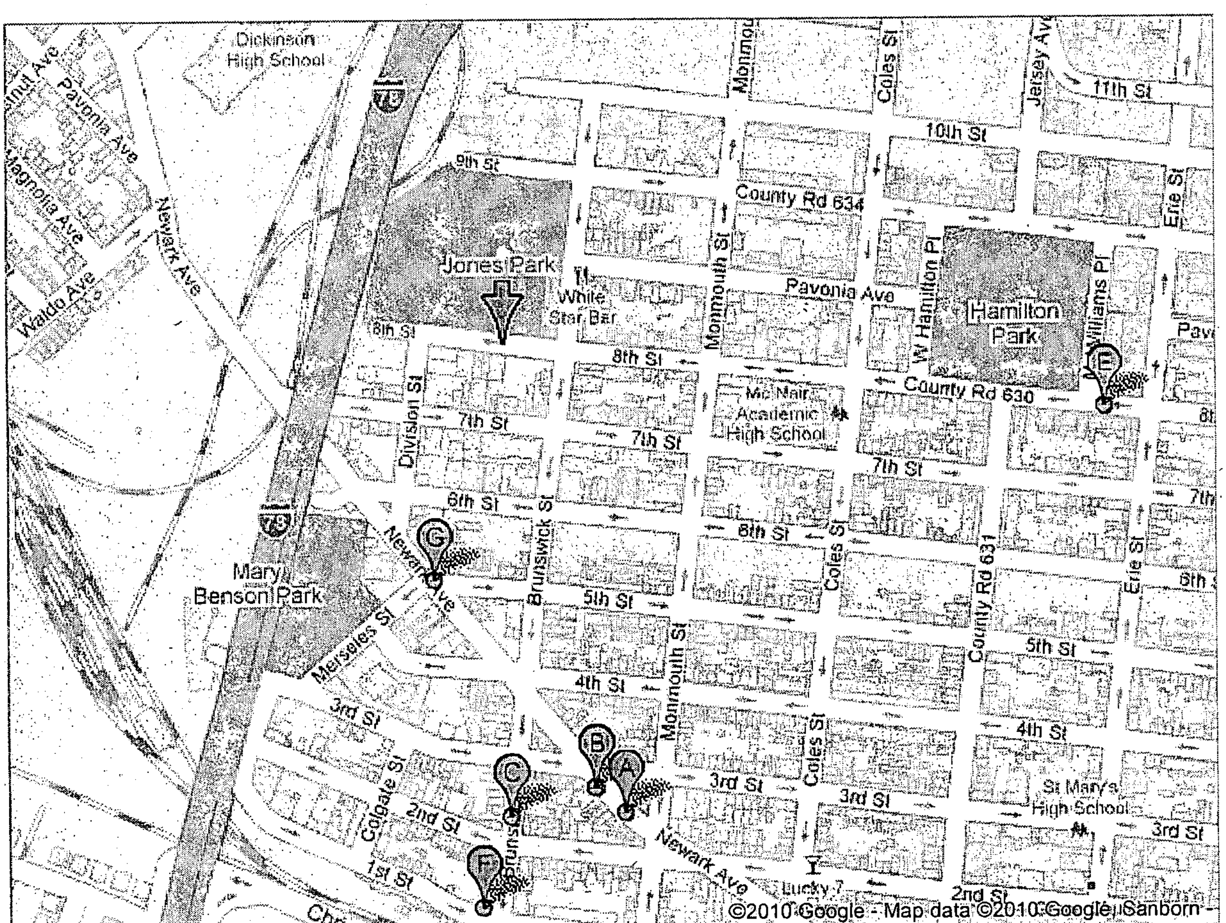
F. K & G Kindercare
370 1st St, Jersey City, NJ - (201) 420-4887 -
0.3 mi S

G. 221 First Ave Corporation
332 Newark Ave, Jersey City, NJ -
(201) 792-6569 - 0.1 mi S

H. Smile **Child Care** Center
194 Newark Ave, Jersey City, NJ -
(201) 963-8533 - 0.5 mi SE

I. Montessori School of Jersey
17 Erie St, Jersey City, NJ - (201) 432-6300 -
0.6 mi SE
5 reviews

J. Baby Galileo Preschool & Daycare LLC
175 Newark Ave, Jersey City, NJ -
(201) 451-7788 - 0.5 mi SE



29

Google maps schools

A. Holy Rosary Elementary School
189 Brunswick St, Jersey City, NJ - (201) 420-5213
3 reviews

B. Mc Nair Academic High School
123 Coles St, Jersey City, NJ - (201) 418-7618

C. Jotham W. Wakeman No. 6 Elementary School
100 Saint Pauls Ave, Jersey City, NJ - (201) 714-4310
6 reviews

D. Number 5 Elementary School
182 Merseles St, Jersey City, NJ - (201) 714-4300

E. Ressurection School
189 brunswick st, Jersey City, NJ - (201) 432-3588
1 review

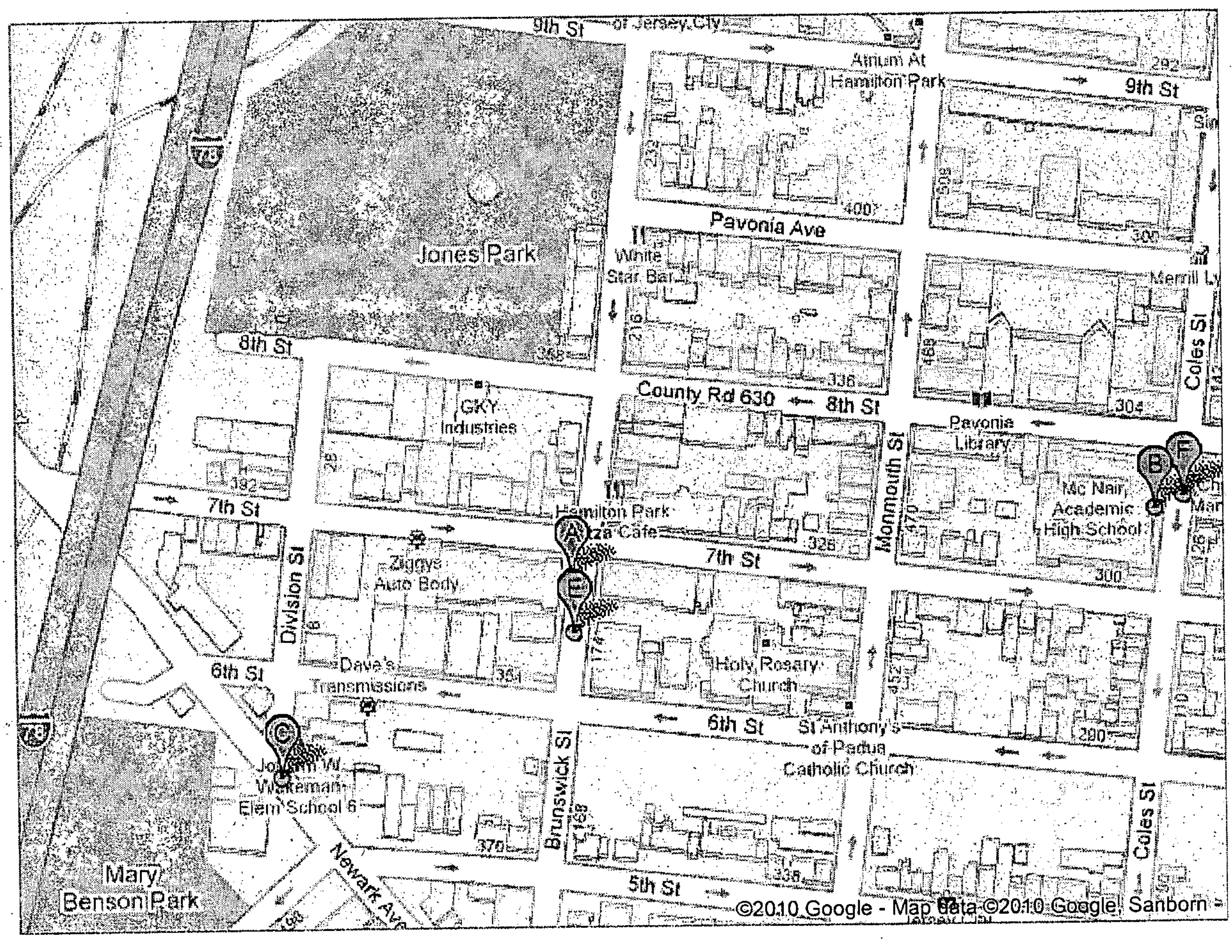
F. Jersey City Board of Education
123 Coles St, Jersey City, NJ - (201) 876-4804

G. Genesis Educational Center
317 3rd st, Jersey City, NJ - (201) 798-0642
1 review

H. Future Stars Day Care Center
123 Brunswick St, Jersey City, NJ - (201) 876-9292

I. Viaquenti Preschool
285 Newark Avenue, Jersey City, NJ - (201) 217-8707
3 reviews

J. K & G Kindercare
370 1st St, Jersey City, NJ - (201) 420-4887



ATTACHMENT H

site remediation & waste management

Hudson County Chromate Chemical Production Waste Sites

Update: Chromium Moratorium is Lifted (posted 14 February 2007)

Background

(From 1997)

The Hudson County Chromate Chemical Production Waste Sites are located throughout Jersey City, Bayonne, Kearny, Newark and Secaucus in Hudson and Essex Counties, New Jersey. NJDEP has identified over 160 sites that are contaminated with chromite ore processing residue, also known as chromate waste. The chromate chemical production waste has been found at residential, commercial and industrial locations. The more than two million tons of waste disposed of over the area were generated by three chromite ore-processing plants which operated for approximately 70 years between 1905 and 1971. The three plants, located in Hudson County, were owned and operated by:

1. PPG Industries, Inc. (PPG) at its former chromium chemical production facility location at Garfield Avenue in Jersey City.

2. The predecessors and subsidiaries of AlliedSignal, Inc. (Allied) previously located on Route 440 in Jersey City and

3. The predecessor and subsidiaries of Occidental Chemical Corp., Maxus Energy Corp. and Chemical Land Holding, Inc. previously located on Belleville Turnpike in Kearny.

PPG, AlliedSignal and Maxus are collectively referred to as the Responsible Parties (RPs).

The chromate waste from the above facilities was used as fill in preparation for building foundations, construction of tank berms, roadway construction, filling of wetlands, sewerline construction and other construction and development projects. Chromate contamination has been found in a variety of places including the walls and floors of buildings, interior and exterior building surfaces, surfaces of driveways and parking lots and in the surface and subsurface of unpaved areas.

Remedial Action

Known chromate waste contamination at most residential sites has been remediated, two apartment complexes are still under investigation. Two-thirds of the non- residential sites are being addressed by the RPs.

In addition, using public funds, NJDEP will perform Remedial Investigations (RI) of 45 sites to delineate the extent of the contamination and identify cleanup options. These sites include 22 sites for which no RP has been identified, known as the Orphan Sites Group 1 and Group 2, and 23 sites known as the Allied Directive sites that NJDEP has determined are the responsibility of AlliedSignal, Inc., although the company has not accepted responsibility for these sites. Various Interim Remedial Measures (IRMs) were initiated by NJDEP, including capping (paving) 16 sites and fencing nine others. Interim Remedial Measures were completed at the publicly funded sites in December 1995. The RI work will consist of soil, sediment, surface water, ground water, biota (plant and animal) and building sampling and analysis. The RI work on the Allied Directive sites began in 1994. Preliminary-RI work has begun on the Orphan sites, and the RI for these sites is in progress.

To report an environmental incident impacting NJ, call the Toll-Free 24-Hour Hotline
1-877-WARNDEP / 1-877-927-6337

Department of Environmental Protection
P. O. Box 402
Trenton, NJ 08625-0402

Last Updated: February 14, 2007

ATTACHMENT I

Hudson County Chromium Sites Status Report

SITE #	SITE NAME	STREET	TOWN	STATUS	RP CATEGORY
1	Bramhall Avenue	597 Bramhall Avenue	Jersey City	NFA	PPG
2	Caven Point 1	80 Caven Point	Jersey City	NFA	PPG
3	Caven Point 2	Rear of 80 Caven Point Road	Jersey City	NFA	PPG
4	Caven Point 3	90 Caven Point Road	Jersey City	NFA	PPG
5	Caven Point 4 (air dock system)	100 Caven Point Road	Jersey City	NFA	PPG
6	Communipaw 1	378 Communipaw Avenue	Jersey City	NFA	PPG
7	NJ Turnpike at Communipaw	Intersection of N.J. Turnpike and	Jersey City	RI	Allied-Directive
8	DEP Green Acres Site	East of Ultramar, North of Port Lib	Jersey City	NFA	PPG
9	NJ Turnpike Exit 14A	New Jersey Turnpike Exit 14A	Jersey City	Closed	Not a Site
10	Grand Street 4	383 Grand Street	Jersey City	NFA	PPG
11	Grand Street 5	267,269,271 Grand Street	Jersey City	NFA	PPG
12	Grand Street 6	541-547 Grand Street	Jersey City	NFA	PPG
13	Halladay Street	215 Halladay Street	Jersey City	NFA	PPG
14	Kearny Avenue	30-32 Kearny Avenue	Jersey City	NFA	PPG
15	Liberty State Park	Libery State Park east of Environ	Jersey City	RA	Allied Directive
16	Linden East (Levy & Sons)	Linden Avenue East	Jersey City	NFA	PPG
17	Newark Avenue - Exxon Station	Newark Avenue and Howell Street	Jersey City	RI	NJDEP Orphan Site #1
18	Pacific 1	421-425 Pacific Avenue	Jersey City	NFA	PPG
19	Phillip Street	Phillip Street Junction	Jersey City	RI	Allied Directive
20	NJ Turnpike Bayview	Below Overpass 14B	Jersey City	RI	NJDEP Orphan Site #1
21	NJ Turnpike Greenville	New Jersey Turnpike at Piers 20 &	Jersey City	RI	NJDEP Orphan Site #1
22	Woodward Street	299-301 Woodward Street	Jersey City	NFA	PPG
23	Communipaw 2,3	499 - 501 Communipaw Avenue	Jersey City	NFA	PPG
24	Communipaw 4	839 Communipaw Avenue	Jersey City	NFA	PPG
25	Fulton Street	198 Fulton Street	Jersey City	Closed	Not a site
26	Dwight Street. #9	197-207 Dwight Street	Jersey City	Closed	Not a Site
27	Dwight Street. #1a	196 Dwight Street	Jersey City	Closed	Not a site

SITE #	SITE NAME	STREET	TOWN	STATUS	RP CATEGORY
28	Dwight Street. #1b	194 Dwight Street	Jersey City	NFA	PPG
29	Dwight Street #1c	190 Dwight Street	Jersey City	NFA	PPG
30	Dwight Street. #2	180 Dwight Street	Jersey City	Closed	Not a Site
31	Dwight Street. #3	181-183 Dwight Street	Jersey City	Closed	Not a Site
32	Dwight Street. #4	179-177 Dwight Street	Jersey City	Closed	Not a Site
33	Dwight Street. #11	173-175 Dwight Street	Jersey City	Closed	Not a Site
34	Dwight Street. #5	145 Dwight Street	Jersey City	Closed	Not a Site
35	Dwight Street. #7	135 Dwight Street	Jersey City	Closed	Not a Site
36	Dwight Street. #8	129 Dwight Street	Jersey City	Closed	Not a Site
37	Martin Luther King Dr.	143-147 Martin Luther King Dr.	Jersey City	NFA	PPG
38	Cambridge Avenue	51 Cambridge Avenue	Jersey City	NFA	PPG
39	Pine Street	260 Pine Street	Jersey City	NFA	PPG
40	Pen Horn Creek - Secaucus	Pen Horn Avenue	Secaucus	NFA	Occidental Chemical
41	St Johnsbury Trucking	O'Brien and Sellers Streets	Kearny	RI	Occidental Chemical
42	3rd & Adams Sts. - ECIS Trucking	90 - 94 and 98-102 Jacobus Av	Kearny	RA	Occidental Chemical
43	Diamond Head Oil	Diamond Head Oil	Kearny	Closed	Not a Site
44	Disch Construction	Jacobus Avenue	Kearny	Closed	Not a Site
45	Emco (aka Dupont Tract #1)	49-57 O'Brien Road	Kearny	NFA	Occidental Chemical
46	Jenkins Enterprises	79-85 3rd Ave.	Kearny	RI	Occidental Chemical
47	Goldies Auto Parts	1010 Belleville Tpk.	Kearny	NFA	Occidental Chemical
48	Clinton Cartage, (aka Clinton)	1000 Belleville Tpk.	Kearny	NFA	Occidental Chemical
49	Arden Chemical / aka American	100 Hackensack Avenue	Kearny	RI	Occidental Chemical
50	Janatex Company	993 Belleville Turnpike	Kearny	RI	Occidental Chemical
51	Kearny Township Site #1	Belleville Turnpike	Kearny	RI	Occidental Chemical
52	Kenney Steel Treating Co.	100 Quincy Place	Kearny	NFA	Occidental Chemical
53	Kleerkast Inc.	450 Schuyler Avenue	Kearny	NFA	Occidental Chemical
54	Pfaff Tool & Mfg.	McWhirter & Gross St.	Kearny	RI	Occidental Chemical
55	New Rent Trucking (aka New Rent	520 Belleville Turnpike	Kearny	NFA	Occidental Chemical
56	NJ Turnpike Kearny #1	Belleville Turnpike & NJ Turnp	Kearny	NFA	Occidental Chemical
57	Riverbank Park	Riverbank Park	Kearny	Closed	Not a Site

SITE #	SITE NAME	STREET	TOWN	STATUS	RP CATEGORY
58	Nicole's Warehouse N/F Ru Son	996 Belleville Tpk.	Kearny	RI	Occidental Chemical
59	Trumbull Asphalt	Newark Turnpike	Kearny	RA	Occidental Chemical
60	Tullo Exxon Station	61 Lincoln Highway	Kearny	RI	Occidental Chemical
61	Turco Industrial Area	590 Belleville Turnpike	Kearny	RI	Occidental Chemical
62	West Hudson Lumber Co.	60 Arlington Ave.	Kearny	NFA	Occidental Chemical
63	Baldwin Oils & Commodities, Inc.	Caven Point Road at Burma Road	Jersey City	RI	PPG
64	Black Tom Creek	Between Pittston,and Port Libe	Jersey City	Closed	Not a Site
65	Burma Road	West side of Burma Road Near Ca	Jersey City	RI	PPG
66	Caven Point 5	Government Road	Jersey City	NFA	PPG
67	Chapel Avenue	Between Chapel & Linden Ave.,	Jersey City	RI	Allied Directive
68	Clendenny Outfall	Foot of Clendenny Avenue	Jersey City	RI	Allied Directive
69	Clendenny Avenue	Rear of Bradleys Department Stor	Jersey City	RI	Allied Directive
70	Colony Restaurant & Diner	Communipaw Avenue	Jersey City	RI	Allied Directive
71	Communipaw Jug	Off Route 1&9	Jersey City	RI	Honeywell
72	Cove Site	Upper NY Bay	Jersey City	Closed	Not a Site
73	Degan Oil	200 Kellogg Street	Jersey City	RI	Honeywell
74	Dwight Street #10	188 Dwight Street	Jersey City	NFA	PPG
75	Dwight Street #12	121 Dwight Street	Jersey City	NFA	PPG
76	Eighth Street #1	379-381 Eighth Street	Jersey City	NFA	Developer/Owner
77	Eighth Street #2	383 Eighth Street	Jersey City	RI	NJDEP Orphan Site #1
78	Engler Site	Culver Avenue	Jersey City	Closed	Not a Site
79	Rt. 440 Vehicle Corp	10 Water Street	Jersey City	RI	Honeywell
80	Grand Street #1	223-225 Grand Street	Jersey City	NFA	PPG
81	Grand Street #2	215-217 Grand Street	Jersey City	NFA	PPG
82	Grand Street #3	237 Grand Street	Jersey City	NFA	PPG
83	Grand Street #7	235 Grand Street	Jersey City	NFA	PPG
84	Grand Street #8	219 Grand Street	Jersey City	NFA	PPG
85	Grand Street #9	381 Grand Street	Jersey City	NFA	PPG
86	Nicholas/Hamilton Trucking	123 Duffield Ave	Jersey City	RI	NJDEP Orphan Site #1
87	JCIA Site	525 Route 440	Jersey City	RI	Honeywell

SITE #	SITE NAME	STREET	TOWN	STATUS	RP CATEGORY
88	JCIA Well	575 Route 440	Jersey City	RI	Honeywell
89	Martin Luther King Drive #3	149 Martin Luther King Drive	Jersey City	NFA	PPG
90	Baldwin Steel	460 Route 440	Jersey City	RA	Honeywell
91	NE Interceptor 1	Turnpike near Johnston Street	Jersey City	RI	Allied Directive
92	E Interceptor 2	Under Turnpike near Ash Street	Jersey City	RI	Allied Directive
93	NE Interceptor 3	East side plant yard	Jersey City	RI	Allied Directive
94	18th Street Sewer	18th & Jersey Avenue	Jersey City	RI	Allied Directive
95	Newport Site	Provost & Povonia	Jersey City	NFA	Developer/Owner
96	Ninth Street Firehouse	Ninth Street near Grove	Jersey City	NFA	PPG
97	NW Interceptor 1	Near Secaucus Road	Jersey City	RI	Allied Directive
98	NW Interceptor 2	Near County Road	Jersey City	RI	Allied Directive
99	Recycling Spec., N/f Paz Jersey	375 Rt. 1&9	Jersey City	RI	Allied Directive
100	Richard Street Interceptor	East of Richard Street	Jersey City	RI	Allied Directive
101	Stockton Ave	Stockton Ave & Route 1&9	Jersey City	RI	Allied Directive
102	Woodlawn Street	124A Woodlawn	Jersey City	NFA	PPG
103	Amtrak Access Road	Belleville Turnpike	Kearny	RI	Occidental Chemical
104	Old Communipaw Avenue	Rt. 1&9 Truck Section 1R	Jersey City	Closed	Not A Site
105	Colony 2 Site	Communipaw Avenue 7 Rt. 1&9	Jersey City	Closed	Not a Site
106	Lincoln Park	Lincoln Park	Jersey City	Closed	Not a Site
107	Fashionland	18 Chapel Avenue	Jersey City	RI	PPG
108	Albanil Dyestuff	20 E. Linden Avenue	Jersey City	RI	PPG
109	Strickland Trucking AKA Seigle	Foot of Pennsylvania Avenue	Kearny	Closed	Not a Site
110	Frank's Auto Electric	200 Garfield Avenue	Kearny	NFA	Occidental Chemical
111	Vacuum Forming Equipment Servi	39 Rizzolo Road	Kearny	Closed	Not a Site
112	Ultramar Petroleum #1	Caven Point Road	Jersey City	NFA	PPG
113	Diamond Shamrock Corp.	1015 Belleville Turnpike	Kearny	RI	Occidental Chemical
114	Garfield Avenue Site	880 Garfield Avenue	Jersey City	RI	PPG
115	Roosevelt Drive-In	441 Route 440	Jersey City	RA	Honeywell
116	Standard Chlorine Site	1035 Belleville Tpk.	Kearny	RI	Occidental Chemical

SITE #	SITE NAME	STREET	TOWN	STATUS	RP CATEGORY
117	Ryerson Steel / Mutual Site	Route 440	Jersey City	RI (GW), NFA (soil)	Honeywell
118	La Pointe Park	DeKalb Street and Styvusant Ave	Jersey City	NFA	PPG
119	Droyers Point	Kellogg Street	Jersey City	NFA (Soil), RI (GW)	Allied Directive
120	Trader Horn	485 Route 440	Jersey City	RA	Honeywell
121	Garfield Auto Parts	960 Garfield Avenue	Jersey City	RI	PPG
122	Whitney Young Jr. School	Stegman Street	Jersey City	Closed	Not a Site
123	Stegman Street	136 Stegman Street	Jersey City	NFA	PPG
124	Roosevelt Lanes	427 Route 440	Jersey City	RI	Honeywell
125	Delphic Consolidation & Distributio	60 Kellogg Street	Jersey City	RI	Honeywell
126	Kuehne Chemical	86 Hackensack Avenue	Kearny	RI	Occidental Chemical
127	Pine Street 2	262-266 Pine Street	Jersey City	NFA	PPG
128	Monitor Street	65-71 Monitor Street	Jersey City	NFA	PPG
129	Dwight Street	184-186 Dwight Street	Jersey City	NFA	PPG
130	Communipaw 5 (aka site 104 & 10	Communipaw Avenue	Jersey City	RI	Allied Directive
131	Hackensack River Access Road	Belleville Turnpike	Kearny	RI	Occidental Chemical
132	Town & Country Linen Warehouse	808 Garfield Avenue	Jersey City	RI	PPG
133	Ross Wax	22 Halladay Street	Jersey City	RI	PPG
134	Old Dominion (Unitrans)	100 Kellogg Street	Jersey City	RI	Honeywell
135	Vitarroz	51-99 Pacific Avenue	Jersey City	RI	PPG
136	Exxon Company, U.S.A.-Bayonne	Foot Of Twenty Second Street	Bayonne	RI	Exxon
137	Rudolph Bass	45 Halladay St.	Jersey City	RI	PPG
138	Bayonne Sewerage Treatment Pla	Foot of Oak Street	Bayonne	RI	NJDEP Orphan Site #1
139	IMTT (Bayonne Industries)	Foot of East 22nd Street	Bayonne	RI	NJDEP Orphan Site #1
140	ABF Trucking	80 Kellogg Street	Jersey City	RI	Honeywell
141	Zeneca Inc. (aka: ICI Americas)	Foot of East 22nd Street	Bayonne	RI	Exxon
142	Pine Street 3	222 & 224 Pine Street	Jersey City	NFA	PPG
143	F. Talarico Auto	846 Garfield Avenue	Jersey City	RI	PPG
144	Bayonne Sewage Pipeline	19th-58th Street and Newark Bay	Bayonne	RA	Honeywell
145	Bellezza Construction Co.	Fish House Road	Kearny	NFA	Occidental Chemical

SITE #	SITE NAME	STREET	TOWN	STATUS	RP CATEGORY
146	Commerce Street Site	Foot of Commerce Street	Bayonne	RI	PPG
147	Hartz Mountain (Douglas Holdings	999 Baldwin Avenue	Weehawken	RA	PPG
148	British Petroleum Corp.	Building 350, Coastal Street	Newark	NFA	Occidental Chemical
149	Seton Leather Co.	349 Oraton Street	Newark	RI	Occidental Chemical
150	Coastal Oil Co.(AKA: Belcher Tan	Foot of E. 5th Street	Bayonne	RI	NJDEP Orphan Site #1
151	Halladay Street 3	409-411 Halladay Street	Jersey City	NFA	PPG
152	Kenrich Chemical	140 East 22nd Street	Bayonne	RA	NJDEP Orphan Site #1
153	Former Morris Canal Site 1	Route 440	Jersey City	RA	Honeywell
154	College Tower Apartments	37 College Drive	Jersey City	RA	Honeywell
155	Food Town	265 Ocean Avenue	Jersey City	RI	Honeywell
156	Gregory Park Apartments	270 Henderson Street	Jersey City	RI	PPG
157	The Clean Machine Car Wash	Route 440 State Hwy	Jersey City	RA	Honeywell
158	Isabella Avenue Residences	36-40 & 76 Isabella Avenue	Bayonne	NFA	NJDEP
159	Pacific Avenue 2	404-410 Pacific Avenue	Jersey City	NFA	PPG
160	Johnston Avenue 1	345-351 Johnston Avenue	Jersey City	NFA	PPG
161	Maple Street 1	79 Maple Street	Jersey City	NFA	PPG
162	Conrail Rail Spur	Between Oak and 5th Street	Bayonne	RA	NJDEP Orphan Site #1
163	Posnak & Turkish, Inc.	Foot of Kellogg Street	Jersey City	NFA	Honeywell
164	Value City Furniture	32 E. 52nd Street	Bayonne	NFA	PPG
165	Tempesta & Sons, Inc.	Foot of Jersey Avenue & Aetna Str	Jersey City	RA	Allied Directive
166	Route 440 Extension	End of Route 440	Bayonne	RI	Honeywell
167	THIRD ST. R.O.W./J.F. LOMMA	THIRD ST. AND CENTRAL AVE.	Kearny	RA	Occidental Chemical
168	THIRD ST. R.O.W. AND PSE&G	THIRD ST AND CENTRAL AVE.	Kearny	RI	Occidental Chemical
169	CONRAIL	CENTRAL AVE.	Kearny	NFA	Occidental Chemical
170	BERGEN BARREL AND DRUM	43-45 O'BRIEN ROAD	Kearny	NFA	Occidental Chemical
171	Central Ave Between Pennsylvani	Central Ave.	Kearny	NFA	Occidental Chemical
172	Warren Street	Warren Street	Jersey City	RA	Allied Directive
173	Metro Field	West Side Avenue	Jersey City	NFA	Honeywell
174	Dennis P. Collins Park	1st Street	Bayonne	RI	NJDEP Orphan Site #1
175	Former Morris Canal Site 2	Grand Street	Jersey City	RA	Allied Directive

SITE #	SITE NAME	STREET	TOWN	STATUS	RP CATEGORY
176	Reed Minerals	339 Central Avenue	Kearny	RI	Occidental Chemical
177	Bayonne Municipal Lot	Hook Road	Bayonne	RI	NJDEP Orphan Site #1
178	Cabana Club	Burma Road and Theodore Conra	Jersey City	RI	Allied Directive
179	Twin City Auto	Broadway Street	Bayonne	NFA	Developer/Owner
180	Eastern Oil (180A & 180B)	Howell Street	Jersey City	RI	NJDEP Orphan Site #1
181	Johnson Brothers Trucking	40A Hackensack Ave.	Kearny	Closed	Not a Site
182	Radial Casting/Electric Company	Pennsylvania/Jacobus Avenue	Kearny	Closed	Not a Site
183	Sludge Line 1	Sludge Line between Randolph Str	Jersey City	RI	Allied Directive
184	M.I. Holdings, Inc.	223 West Side Avenue	Jersey City	RA	Honeywell
185	Allied Stockpile	Jersey Avenue	Jersey City	RI	Allied Directive
186	Garfield Avenue #1	947 Garfield Avenue	Jersey City	RI	NJDEP Orphan Site #1
187	Route 440 Median Strip	Route 440 between Danforth and	Jersey City	RI	NJDEP Orphan Site #2
188	Sussex Street #1	Sussex Street (West of Warren)	Jersey City	RI	NJDEP Orphan Site #2
189	Henderson Street #1	Henderson and Second Street	Jersey City	RI	NJDEP Orphan Site #2
190	Bayonne Durable Construction C	195 East 22nd Street	Bayonne	Closed	Not a Site
191	Port Imperial Marina	1 Pershing Road	Weehawken	RA	Developer/Owner
192	NJ Turnpike Newark #1	Eastern Spur at Piers 10S and 11	Newark	RI	NJDEP Orphan Site #2
193	McWhirter Road #1	McWhirter Road and Sellers Stree	Kearny	RA	Occidental Chemical
194	DEMILLE CHEMICAL CORPORA	103-111 Fairmount Avenue	Jersey City	Closed	Not a Site
195	Belleville Turnpike #1	Belleville Turnpike and NJ Transit	Kearny	NFA	Occidental Chemical
196	POTW Outfall Line	Former CRRNJ Freight Yard at LS	Jersey City	RI	NJDEP Orphan Site #2
197	Grand Street	Grand Street between Washington	Jersey City	RI	NJDEP Orphan Site #2
198	Hartz Mountain #1	Land Behind Hartz Mountain Buildi	Jersey City	RI	NJDEP Orphan Site #2
199	Sludge Line 2	Sludge Line Between Garfield Ave	Jersey City	RI	NJDEP Orphan Site #2
200	Sludge Line 3	Sludge Line Between Arlington Av	Jersey City	RI	NJDEP Orphan Site #2
201	NJ Turnpike Kearny #2	Belleville Turnpike & NJ Turnpike (	Kearny	NFA	Occidental Chemical
202	Caven Point Realty	Between Pacific Street and NJ	Jersey City	RI	NJDEP Orphan Site #2
203	346 Claremont Associates	NJ Transit Light Rail, 200' East of	Jersey City	RI	NJDEP Orphan Site #2
204	Conrail Edgewater Branch	West side of NJ Turnpike at the fo	Jersey City	RI	NJDEP Orphan Site #2
205	Urban Redevelopment Partners	NW corner of 1st Street & Washin	Jersey City	RI	NJDEP Orphan Site #2

SITE #	SITE NAME	STREET	TOWN	STATUS	RP CATEGORY
206	Polarome International	200 Theodore Conrad Drive	Jersey City	RI	NJDEP Orphan Site #2
207	Garfield Avenue #2	942, 944 & 946 Garfield Avenue	Jersey City	RI	NJDEP Orphan Site #2
208	Ultramar Petroleum #2	Linden Avenue East	Jersey City	NFA	PPG
209	Joe's Welding	25 O'Brien Road	Kearny	RI	Occidental Chemical
210	Ace Trucking	21 Hackensack Avenue	Kearny	RI	Occidental Chemical
211	PSE&G West End Gas Plant	444 St. Pauls Avenue	Jersey City	RI	Developer/Owner
212	Fairmount Chemical	117 Blanchard Street	Newark		Unassigned

ATTACHMENT J

Let's protect our earth

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT

Michele M. Putnam
Deputy Director
Hazardous Waste Operations

John J. Trela, Ph.D., Director
401 East State St.
CN 028
Trenton, N.J. 08625-0028
(609)633-1408

Lance R. M[illegible]
Deputy Director
Responsible Party Remedial Action

Mr. Carl Yedibalian
Modern Village Development Corporation
377 Eighth Street
Jersey City, NJ 07302

MAR 3 1 1989

Re: 379-381 Eighth Street
Jersey City, New Jersey
Chromate Chemical Waste Site #76

Dear Mr. Yedibalian:

In a Notice issued by the New Jersey Department of Environmental Protection on December 13, 1988 you were informed that chromate chemical production waste was found to be present at your property at the above referenced address. This site had been used to store drummed chromate waste which was removed from your site at 383 Eight Street. The drummed materials have since been removed and properly disposed of as is evidenced by the manifest documentation you have been provided. An inspection of the site conducted by the writer and Mr. John McDonald of the Jersey City Engineering Department confirmed the removal of the drums. Since there is no additional evidence of the presence of chromate waste on your property at 379-381 Eighth Street the site is no longer considered to be a chromate chemical production waste disposal site and will be removed from NJDEP's list of such sites. Your property at 383 Eighth Street at which there is existing chromate chemical contamination will remain on the list. If you have any questions on this matter please contact me at (609) 633-0701.

Sincerely,

Thomas McKee
Section Chief
Division of Hazardous
Waste Management

cc: John McDonald, Jersey City Engineering

CHROME 003 0730

ATTACHMENT K

Let's protect our earth

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS SITE MITIGATION
401 E. State St., CN 413, Trenton, N.J. 08625-0413
(609) 984-2902
Fax # (609) 633-2360

Anthony J. Farro
Director

JUN 27 1989

Mr. John V. Cinicarelli
Interfaith Community Organization
83 Wayne Street
Jersey City, New Jersey 07302

Dear Mr. Cinicarelli:

RE: 379-381 and 383 8th Street Jersey City Chromium Waste Sites

This is in response to your letter of June 1, 1989 to Mr. Thomas McKee of the Division of Hazardous Waste Management and to follow up conversations Mr. George Tamaccio of my staff had with Mr. Pat Bower of the Interfaith Community Organization staff and yourself. I can confirm that the information contained in Mr. McKee's letter of March 31, 1989 to Mr. Carl Yedibalian, with a copy to Mr. John McDonald of the City of Jersey City Engineering Department, is accurate. The only documented chromate chemical production waste ever present at the 379-381 address was material which had been excavated from the property at 383 8th Street. This waste has now been removed from the 379-381 8th Street property and there is no additional evidence of the presence of chromate waste at this location. Accordingly, the 379-381 site is being removed from the New Jersey Department of Environmental Protection's list of chromate chemical production waste disposal sites. The property at 383 Eighth Street at which there is existing chromate chemical contamination will remain on the list.

Specific testing for chromium has not been done on the 379-381 8th street property as there was no reason to suspect that any chromate production wastes, other than the material from the excavation at 383 8th street were present at 379-381 8th street. I am enclosing the information we have

CHROME 003 0710

available on both sites in question. If you have any information which indicates that chromium contamination is present at this location please forward it to me as soon as possible. Should you have additional questions, please contact George Tamaccio, Community Relations Coordinator, at (609) 984-3081.

Sincerely,

Grace L. Singer, Chief
Bureau of Community Relations

HS284:fb

Enclosures

c: P. Bower
T. McKee

CHROME 003 0710 A

site File # 76

Let's protect our earth

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
CHRISTOPHER J. DAGGETT, COMMISSIONER
CN 402
TRENTON, N.J. 08625-0402
(609) 292-2885
Fax: (609) 984-3962

13 OCT 1989

Mr. John V. Cinciarelli
Interfaith Community Organization
83 Wayne Street
Jersey City, NJ 07302

Dear Mr. Cinciarelli:

Re: Former NJDEP Site #76 379-381 Eight Street

The New Jersey Department of Environmental Protection (Department) is in receipt of your letter dated September 25, 1989 regarding the above referenced property.

Pursuant to your request, I have instructed the appropriate Department personnel to initiate the collection and analysis of soil samples from the above referenced property. Within two weeks of receiving site access approval from the property owner we expect to receive the results of our sampling. The data must then be reviewed for quality assurance prior to release. We anticipate that this will take one week after the data is received.

Previous correspondence dated June 27, 1989 between Grace Singer, Chief, Bureau of Community Relations and yourself (enclosed) indicates that according to Department records, there is no reason to believe this property is contaminated by chromate chemical production waste. However, in light of the fact that the adjacent property (NJDEP Site #77 383 Eighth Street) may still contain residual chromium contamination at depth, appropriate Department personnel will be collecting soil samples to monitor the situation and to assure the community that their health and safety shall not be jeopardized.

Should you have any questions, please contact Frank Faranca, Case Manager, at (609) 633-1480.

I appreciate your concern in this matter and look forward to your continued support.

Sincerely,

/s/ Christopher J. Daggett

Christopher J. Daggett

CHROME 003 0708

c: John Trela, Assistant Commissioner
Lance Miller, Director, DHWM
Ron Corcory, Assistant Director, DHWM
Grace Singer, Chief, Bureau of Community Relations
Nancy Hamill, Chief, Bureau of Environmental Measurements and Quality Assurance
Linda Grayson, Chief, Bureau of Planning and Assessment
Carl Yedibalian, Modern Village Development Corporation

bc: Tom McKee, DHWM/RPCE
Frank Faranca, DHWM/RPCE
George Tamaccio, DHWM/BCR

CHROME 003 0709

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State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
Lance R. Miller, Acting Director
CN 028
Trenton, N.J. 08625-0028
(609) 633-1408

NOV 20 1989

Mr. John Cinciarelli
Interfaith Community Organization
83 Wayne Street
Jersey City, NJ 07302

Dear Mr. Cinciarelli:

Re: NJDEP Site #76, 379-381 Eighth Street
Jersey City, Hudson County

The New Jersey Department of Environmental Protection (NJDEP) is conducting Phase II of its investigation of sites in Hudson County where chromate production wastes are known or suspected to have been used as fill material.

The above referenced property was originally listed due to the presence of drums of chromium contaminated material which had been excavated from the property at 383 Eighth Street. After this material was removed from the property at 379-381 Eighth Street, a visual inspection indicated no further contamination at the 379-381 Eighth Street property and the site was to be removed from the NJDEP list. NJDEP personnel collected soil samples from this property on October 23, 1989 and have analyzed these samples for total chromium.

The analytical sample results indicate that generally the levels of total chromium in soil samples collected from portions of the 379-381 Eighth Street property are below the NJDEP action level except for two samples collected immediately adjacent (6 inches to 1 foot) to the 383 Eighth Street property.

Please refer to the enclosed fact sheets for recommendations concerning chromium waste sites.

Please be advised that this site is being evaluated by NJDEP personnel to ensure the protection of the public health, safety and the environment. Should you have any questions, please contact me at (609) 633-1480.

Sincerely,

Frank Faranca

CHROME 003 0698

Frank Faranca, Case Manager
Responsible Party Cleanup Element

sw
Enclosures

c. Ronald Corcory, RPCE
Thomas McKee, RPCE
Robert Raisch, DHWM/BPA
George Tamaccio, DHSM/BCR
David Barskey, DHSM/BEERA

CHROME 003 0699

ATTACHMENT L

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State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
Lance R. Miller, Acting Director
CN 028
Trenton, N.J. 08625-0028
(609) 633-1408

M E M O R A N D U M

TO: Tom McKee, Project Manager
Bureau of Case Management

THROUGH: Deborah Pinto, Section Chief DMP
Bureau of Planning and Assessment

FROM: Robert Raisch, HSMS II RR
Bureau of Planning and Assessment

DATE: November 16, 1989

SUBJECT: SAMPLING RESULTS FOR 379-381 EIGHTH STREET, JERSEY CITY

PURPOSE OF MEMO:

To outline activities and results of sampling for chromium conducted by members of the Bureau of Planning and Assessment at Site 76, Eighth Street, Jersey City.

NJDEP REPRESENTATIVES PRESENT:

Robert Raisch, HSMS II, BPA
Linda Goldsworthy, HSMS IV, BPA
Frank Faranca, HSMS II, Case Management

SITE REPRESENTATIVES PRESENT:

Karl Yedibalian, Owner
David Buehler, (owner's environmental consultant) from AcuTech

DATE OF SAMPLING: October 23, 1989

DISCUSSION:

The site was previously investigated during Phase I of the Chromium Sampling Project. At that time, chrome waste which had been removed from warehouse at #383 Eighth Street (Site 77) was being stored at the site. Sampling was not conducted since remediation was in progress.

In response to concerns of the Interfaith Community Organization, regarding possible health risk to be surrounding community, soil samples were collected by BPA to determine if chrome contamination exists at the site. The sample collection, analysis and data review for quality assurance were assigned a high priority due to the anticipated release date for the data stated in a response letter from NJDEP Commissioner Christopher Daggett to Mr. John Cinciaselli of the Interfaith Community Organization.

A total of nine soil samples were collected from the surface and from various depths of excavations that were dug on the site for footings of a new building. The samples, which were split with David Buehler of AcuTech, were analyzed by the Bureau of Radiation and Inorganic Analytical Services for total chromium. The samples were collected as per the Phase II Chromium Site Sampling SOP. Chain of Custody procedures were followed according to Department policy.

SAMPLING EPISODE OUTLINE:

Weather: Sunny 53°-60°F

1000: BPA staff arrives at site and meets with Karl Yedibalian and Dave Buehler.

1030: Bob Raisch, Linda Goldsworthy and Dave Buehler put on protective outer clothing. Respiratory protection was judged to be unnecessary because of a lack of dust at the site due to heavy rains the previous days.

1045: Bob Raisch and Linda Goldsworthy prepared field blank.

1050: Soil #1 (BPA 102389S1C) is collected by Bob Raisch from the side of a footing excavation. The depth of the sample collection is approximately 2.5 feet below grade. The sample location is 18 feet from the front fence and 15 feet from the building at 383 (Site 77). Soil sample #1 is described as dark brown and rusty soil mixed with coal material.

1105: Soil #2 (BPA 102389S2C) is collected adjacent to the wall of building at Site 77. What appears to be yellow-green crystals, characteristic of chromium contamination, are noted on the wall of this location. The location of the sample is 28.5 feet back from the front fence at a depth of 6 inches to 1 foot. The sample is described as brown soil with some gravel and organic material. Yellow-green discoloration is also noted in some of the soil sample.

1115: Soil #3 (BPA 102389S3C) is collected adjacent to same foundation wall, 9.5 feet from the front fence. The sample which is described as brown and rust colored soil, is collected from an approximate depth of 2 feet.

1127: Soil #4 and Soil #5 Duplicate (BPA 102389S4C and BPA 102389S5C) are collected 9.5 feet from the fence and 7.5 feet from the Site 77 building wall. The samples, described as a mixture of coal slag and gravel, are collected from an excavation at a depth of 2 feet below grade.

1145: Soil #6 (BPA 102389S6C) is collected from an excavation next to the side walk and six feet from the building at 379 Eighth Street. The depth of the sample collection point is 4.5 feet. The sample consists of brown sandy soil and gravel.

1155: Soil #7 (BPA 102389S7C) is collected from a depth of 0-6 inches, 33 feet from the front fence and 16 feet from building 379. The sample is described as brown sandy soil with some yellow and white material and brick fragments.

1205: Soil #8 (BPA 102389S8C) is collected from an excavation at rear corner of the property. The sample location is 5 feet from the building on Site 77 and 5 feet from the rear fence. The sample consists of brown sandy soil with gravel, glass, brick and other fragments collected from a depth of 3 feet below grade.

1215: Soil #9 (BPA 102389S9C) is collected from Lot 12. The sampling location is 14 feet to the left of and 6 feet back from the 379 Eighth Street Building. The sample consist of hard packed dark brown soil with some clay collected at a depth of 0-4 inches. It was after the sample was collected that Mr. Yedibalian came out and said we were not on his property. The sample will be submitted as a background sample.

1235: Left site.

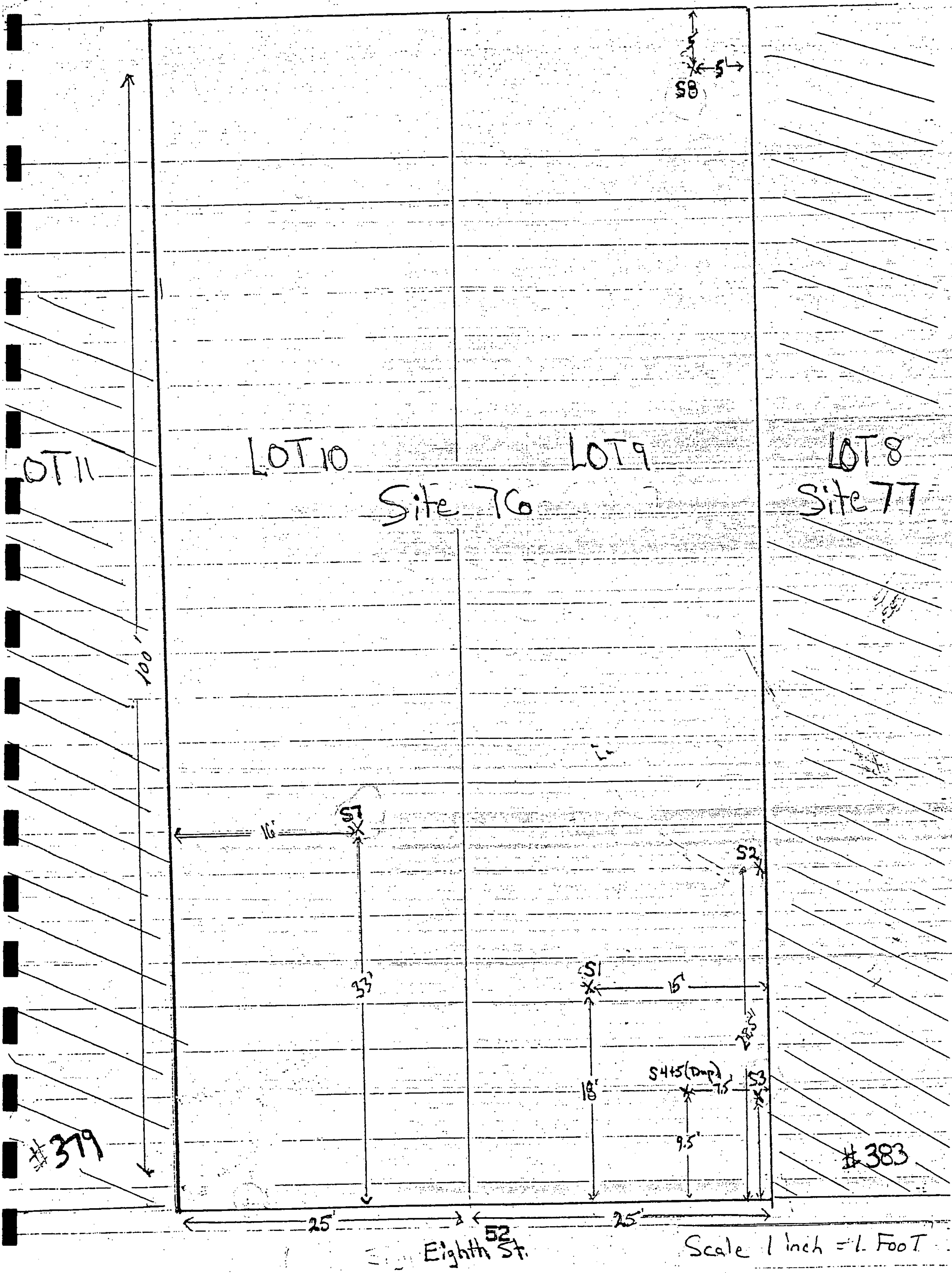
See attachments 1 and 2 for sampling results and collection point locations.

RR:DP:mer

c: Frank Faranca, BCM
George Tomaccio, Communmity Relations
Linda Goldsworthy, BPA
Chrome Project File

Attachments

Field Sample #		Sample Conc. ug/g = ppm
BPA 102389S1C	= S1	19.2
BPA 102389S2C	= S2	705
BPA 102389S3C	= S3	262
BPA 102389S4C	= S4	23.6
BPA 102389S5C	= S5	14.2 Dup
BPA 102389S6C	= S6	12.6
BPA 102389S7C	= S7	57.1
BPA 102389S8C	= S8	40.9
BPA 102389S9C	= S9	58.8 (off site) collected Lot 12



5'
5'
S8
100'
LOT 11
LOT 10
LOT 9
LOT 8
Site 76
Site 77
S7
16'
33'
S2
S1
15'
28.5'
S4+5 (Dup)
7.5'
S3
18'
9.5'
#379
#383
25'
25'
Eighth St.
Scale 1 inch = 1. FooT

ATTACHMENT M

Sit # 76

Modern Village Development
383 Eighth Street
Jersey City, N J 07302

November 22 1989

N J DEP

Att: Frank Faranla FAX # 609-633-1454

Dear Frank;

We were pleased to hear that the numerous soil samples you took at our site revealed no presence of chromium. As expected the two samples taken at the wall of 383 Eighth Street revealed hot spots which I showed you were caused by the construction equipment scraping the wall and chromium particles fell into the dirt. Nevertheless, as per your request and as a precautionary measure we will remove this dirt and place it in a 55 gallon drum and properly dispose of it. We will then place a vapor barrier between the already epoxy coated wall of 383 Eighth Street and the wall of the new building. This will keep our new building secure. I assume this will satisfy your requirements as per our conversation of November 11, 1989 and your letter of November 20, 1989.

In return for our good faith in completing these measures you requested, we would like a letter from you that will state that the land at 379-381 Eighth Street was tested by DEP and found to be free of chromium. This will allow us to show our inquisitive neighbors that the land is clean and allow us to continue construction without further interruption.

Sincerely

Carl Ya

Carl Yedibalian

jk
enclosures
CC - Gary Danis

CHROME 003 0695

ATTACHMENT N

Let's protect our earth

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
Lance R. Miller, Acting Director
CN 028
Trenton, N.J. 08625-0028
(609) 633-1408

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
NO. P 101 604 591

JAN 10 1990

Mr. Carl Yedibalian
Modern Village Development Corporation
383 Eighth Street
Jersey City, NJ 07302

Dear Mr. Yedibalian:

CHROME 043 1684

Re: Sampling Plan - Contaminant Delineation
379-381 Eighth Street
Jersey City, Hudson County
Accutech Environmental Services, Inc.
December 28, 1989

The Department of Environmental Protection (Department) has reviewed the proposed sampling plan prepared by Accutech Environmental Services, Inc. (AES) on behalf of Modern Village Development Corporation (MVDC) dated December 28, 1989. The Department has determined that the above referenced sampling plan is incomplete as proposed and a revised sampling plan shall be submitted to the Department within fourteen (14) calendar days from receipt of this letter. The following is a list of requirements which shall be incorporated into the revised sampling plan:

1. The chromium waste contaminated fill must be delineated to 75 mg/kg of total chromium.

2. The volume of waste for excavation and removal shall extend to the first clean sample location from the last contaminated sample location. Based on the proposed Sample Plan, additional samples will be necessary. Samples in 0 to 6 inch intervals shall be collected from the east wall of the excavated trench adjacent to locations B2, B3, B4 and B5 at the following depths: (1) 0 to 6 inches, (2) 24 to 30 inches, and (3) 54 to 60 inches. If samples cannot be collected from the trench, then these samples must be collected from soil borings adjacent to the trench. Boring locations B1, B6, B7, B8 and B9 shall be sampled from the same intervals. Additional samples may be needed if a volume cannot be properly determined.

3. Analytical parameters and laboratory methods were not specified. All samples shall be analyzed for total chromium using the appropriate

USEPA method (either CLP or SW846). The revised Sampling Plan must specify the preparation and analytical methods to be used.

4. Steps C and D of Section 4.0 (Field Quality Assurance/Quality Control) can be deleted from the sampling equipment decontamination procedure (see p. 6 of the MVDC Sampling Plan).

5. Field and trip blanks are not required (see p. 6 of the MVDC Sampling Plan).

6. All data shall be submitted in Tier CLP-1 format if CLP methods are used or all method QA/QC and raw data shall be submitted if SW846 methods are used.

7. The Sample Plan identifies an objective (see p. 3 of the MVDC Sampling Plan) as being to determine if the 30 mil liner will contain any remaining chromium. However, nothing in the plan describes how this will be done. What will be done must be added to the plan or this objective should be deleted.

8. Two weeks written and oral notice is required prior to initiating field activities so as field audit can be scheduled and sample locations can be finalized in the field between the Department and AES.

9. The rolloff containing material excavated from the site must be properly covered and secured while awaiting classification determination prior to disposal.

10. The footnote (see p. 3 of the MVDC Sampling Plan) that 383 Eighth Street, "has been thoroughly studied and remediated" has yet to be determined. The accuracy and completeness of that previous remedial action requires a more thorough evaluation in the near future which would include submittal of the appropriate documentation indicating what was done.

11. Continuous soil description logs must be recorded during soil borings. Special note should be made of mottled soil or other indicators of the seasonally high water table. Also, any accumulation of ground water within the soil borings must be noted and the depth to ground water estimated. A more extensive ground water investigation, including monitoring wells to determine both true depth to ground water and ground water quality, may be required should it be found that chromium contamination extends below the water table at this site.

Should you have any questions or require clarification, please contact me at (609) 633-1480.

Sincerely,

CHROME 043 1685

Frank Faranca

Frank Faranca, Case Manager
Responsible Party Cleanup Element

sw

c. Ronald Corcory, RPCE
Tom McKee, RPCE
Dave Barskey, DHSM/BEERA
Tedd Ronning, DWR/BGWPA
Jeanne Mroczko, DPP
George Tamaccio, DHSM/BCR
John Cinciarelli, ICO
Michael Schuit, DRA

Let's protect our earth

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
Lance R. Miller, Acting Director
CN 028
Trenton, N.J. 08625-0028
(609) 633-1408
Fax # (609) 633-1454

Mr. Carl Yedibalian
Modern Village Development Corporation
383 Eighth Street
Jersey City, NJ 07302

FEB 20 1990

Dear Mr. Yedibalian:

Re: Sampling Plan - Contaminant Delineation
379 - 381 Eighth Street
Jersey City, Hudson County
Accutech Environmental Services, Inc.
February 9, 1990

CHROME 082 0809

The New Jersey Department of Environmental Protection (Department) has reviewed the proposed sampling plan prepared by Accutech Environmental Services, Inc. (AES) on behalf of Modern Village Development Corporation (MVDC) dated February 9, 1990. The Department has determined that the above referenced sampling plan is acceptable with the following modifications:

1. The final report shall include data plotted with sample locations on site maps and cross-sections.

2. Sample preparation and analytical methods to be used from SW846 must be identified.

3. Legible photocopies of all field notes and photos must be submitted with final report.

4. Two (2) weeks written and oral notice to the Department is required prior to initiating <u>any</u> field activity.

5. Continuous soil description logs must be recorded during soil borings. Special note should be made of mottled soil or other indicators of the seasonally high water table. Also, any accumulation of ground water within the soil borings must be noted and the depth to ground water estimated.

Failure to comply with the requirements set forth above will result in MVDC being in violation of the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 <u>et seq</u>.

Should you require clarification, please contact me at (609) 633-1480.

Sincerely,

Frank Faranca

Frank Faranca, Case Manager
Responsible Party Cleanup Element

sw

c. Ronald Corcory, RPCE
Tom McKee, RPCE
Tedd Ronning, DWR/BGWPA
Dave Barskey, DHSM/BEERA
George Tamaccio, DHSM/BCR
Michael Schuit, Esq., DRA
Jeanne Mroczko, DPP
Gerald Nissen, JCED
John McDonald, JCED

CHROME 082 0810

ATTACHMENT O

SUBSURFACE INVESTIGATION

FOR

MODERN VILLAGE DEVELOPMENT

383 8th Street

Jersey City, NJ

Prepared by:

Accutech Environmental Services, Inc.
Cass Street At Highway 35
Keyport, NJ 07735

March 8, 1990

CHROME 043 1635

SUBSURFACE INVESTIGATION FOR MODERN VILLAGE DEVELOPMENT

List of Figures

List of Appendices

CHROME 043 1636

1.0 INTRODUCTION

On January 31, 1990, Accutech Environmental Services, Inc. (AESI) implemented the Sampling Plan dated February 9, 1990, at the request of the property owner. The purpose of this sampling event was to give the property owner an idea of what levels of chromium were present at the sample locations. A subsurface investigation was performed using the information obtained from the sampling event.

2.0 SOIL ASSESSMENT

The Engineering Soil Survey for Hudson County shown in Figure 2, classifies the soil type at Modern Village Development as F/GS. This is a general term used to describe a large area composed of natural stratified drift and urban fill. The soils at Modern Village Development have been determined through the use of borings to be Urban fill (see Appendix B). The borings were drilled using a 4 inch stainless steel bucket auger with their locations shown in Figure 3. A total of nine borings were completed, the deepest being 5 feet below grade. Soils on this property are for the most part a black silty sand fill with pockets of ash and slag. There is an abundance of pebbles and gravel intermixed with bricks and pieces of concrete which made augering difficult.

In addition to describing the soils, AESI obtained three soil samples from each boring in order to delineate horizontally and vertically Chromium concentrations to 75 ppm. Because there is chromium, section 7C under the Health and Safety Plan in the Sample Plan was followed. All "A" Samples were collected between 0" and 6" from the ground surface. All "B" samples were collected between 24" and 30". "C" samples were collected between 54" and 60". These samples were collected by stainless steel bucket auger. The auger was washed with Alconox and water, rinsed with DI water, and dried with paper towels between samples. The samples were placed in 500 mL glass jars with teflon lined caps and affixed with the following label:

Accutech Environmental Services
Cass Street at Highway 35
Keyport, N.J. 07735
(201) 739-6444

COLLECTOR ____________________

COLLECTOR'S SAMPLE #: ____________________

PLACE OF COLLECTION ____________________

DATE SAMPLED ____________________

FIELD INFO: ____________________

____

These samples were placed in a cooler for transport to All Service Testing, Franklin Technical Center, 72 Veronica Avenue, Somerset, NJ 08873. All Service is a state licensed laboratory, license #18712, and analyzed all the samples for Total Chromium under EPA Method 7190.

CHROME 043 1638

3.0 SAMPLE RESULTS

Due to obstructions encountered during boring, "C" samples were not obtained for B2, B7, B8, and B9. Results for Total Chromium analysis on the samples are shown below:

TABLE 1
SUMMARY OF Cr RESULTS ON SAMPLES
TAKEN ON 1/31/90
MDL = 50 ppm

Interval	Sample	Result (ppm)	Range
0"-6"	B1A	46.7	22.1-154
	B2A	28.0	
	B3A	77.7	
	B4A	62.2	
	B5A	36.4	
	B6A	22.1	
	B7A	154	
	B8A	45.7	
	B9A	25.4	
24"-30"	B1B	11.5	9.5-32.8
	B2B	9.5	
	B3B	14.7	
	B4B	20.9	
	B5B	32.8	
	B6B	13.4	
	B7B	18.6	
	B8B	12.3	

CHROME 043 1639

	B9B	20.7	
54"-60"	B1C	32.2	2.9-32.2
	B3C	2.9	
	B4C	8.2	
	B5C	17.5	
	B6C	13.0	

These results are also shown in Figure 3 and in the Raw Data of Appendix A.

Only two samples exceeded the 75 ppm action limit set by the Department for the Modern Village Development property. The two samples were B3A and B7A and were both surface samples. From previous sampling events, it was found that soil immediately adjacent to the building on the west side of the property contained relatively high levels of chromium. This soil has since been excavated to three feet from the building and placed in a Roll-off on site. The face of the cinder block wall was covered in 30 mil polyethylene and concrete poured into the excavation. It is possible that during these activities soils with higher levels of chromium (Cr) were overlain on top of soils with much lower Cr concentrations. This would explain the rather spotty nature of surface soil containing chromium over 75 ppm. The ranges of Cr concentrations at each interval show that Cr concentrations decreases with depth. Also from the data, the higher concentrations of chromium tend to be concentrated on the southwest side of the property. Three delineation contour maps were created for the nine boring locations. These maps are shown in Figure 4 and are specific for each interval. The maps made for the 24"-30" interval and for the 54"-60" interval also show higher concentrations of chromium for soils on the southwest side of the property. It has also been determined that soils containing low levels of chromium are in contact with groundwater. Therefore, the following groundwater assessment was prepared.

4.0 GROUNDWATER ASSESSMENT

Groundwater flow direction was determined from depth to water data taken from the nine boring locations. This data is also found on the boring logs of Appendix B. No survey data was available to get actual elevations of the ground surface. Assuming that the flat surface of the concrete footings were all level, a string was pulled taught over the borings and anchored on the flat surface of the footings. Depth to water was taken from the string to the water surface. Using this data and distances of the borings from the building, a groundwater contour map and two 3-D perspectives were made for the Water table at the Modern Village Development site. All these maps are part of Figure 5.

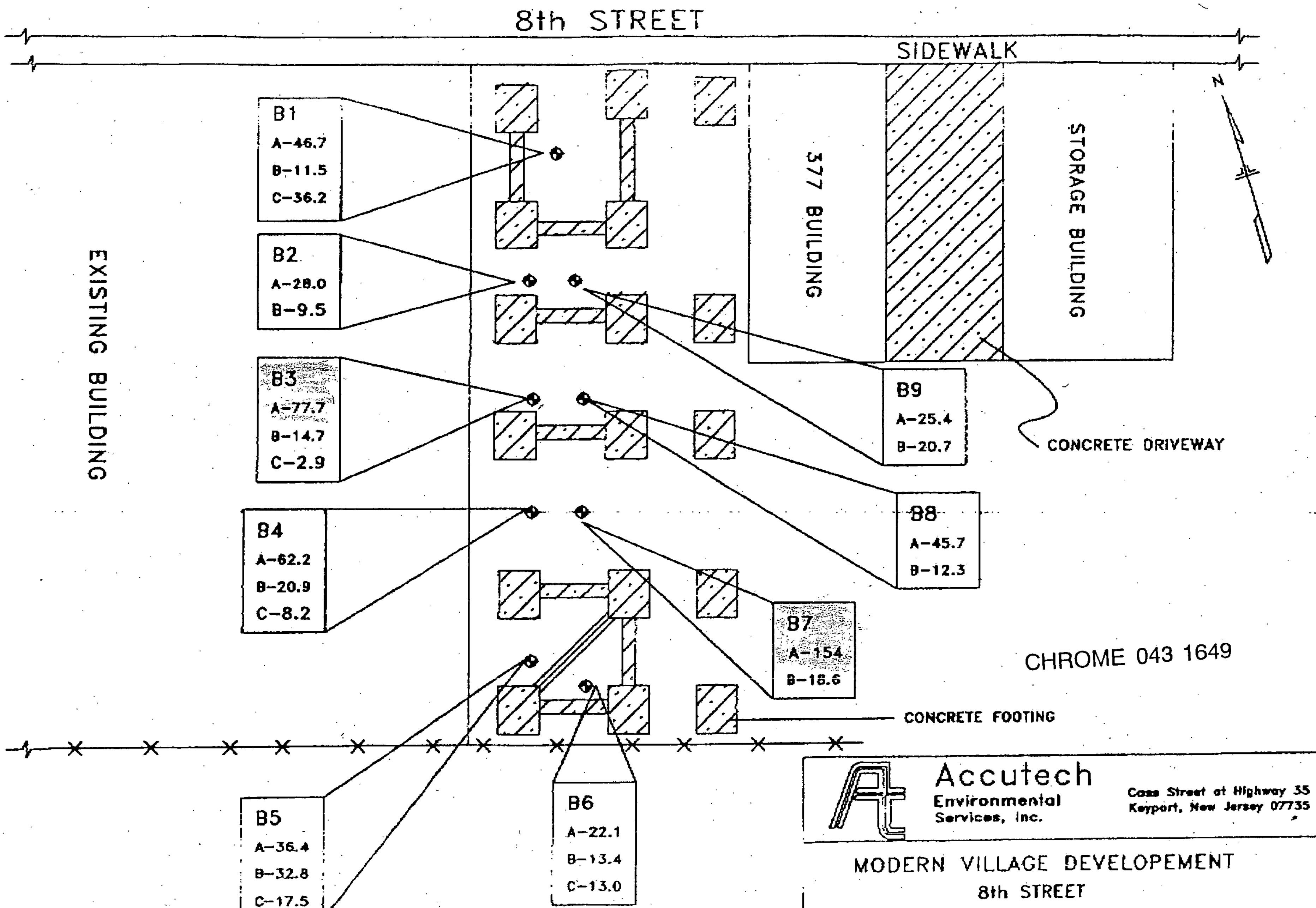
The surface contour map of Figure 5 has eight assumed values. DTW values for B2, B9, B8, B7 were estimated from known values of nearby borings. The values for the four corners of the map were also assumed in order to get a wider view. In general groundwater flow is in a northerly direction and is found between three and four feet below the surface of the concrete footings.

5.0 CONCLUSIONS

The highest concentrations of chromium are found at the surface (max. concentration 154 ppm) possibly related to the removing of soils adjacent to the building with the original chromium leaching problem. Subsurface sampling has shown that maximum chromium concentrations reach 32.8 ppm less than half the 100 ppm action limit with the concentrations decreasing with depth. The highest of the subsurface results are found in the southwest corner of the property near the building with a previously known chromium leaching problem. Soils along the side of the building have been excavated to a distance of three feet from the building and to a depth of four feet. The soils are stockpiled in a Roll-off on site. 30 mil polyethylene covers the side of the building and concrete fills the excavation.

Soils containing low levels of chromium (between 2.9 and 32.2 ppm) are in contact with the groundwater. Therefore, groundwater flow was determined. The direction is in a northern direction towards 8th Street. The quality of the groundwater is unknown.

Since the facts stated in this report are subject to professional interpretation, they could result in differing conclusions. In addition, the findings and conclusions contained in this report are based on various quantitative and qualitative factors as they presently exist. Furthermore, data available from future exploration, sampling and testing of the subject site area may modify the conclusions of this report.



Accutech Environmental Services, Inc.
Cass Street at Highway 35
Keyport, New Jersey 07735

MODERN VILLAGE DEVELOPEMENT
8th STREET
JERSEY CITY, NJ

DATE: 3\8\90	NJDEP SITE #379-381
CAD ID #YED1	SCALE: 1" = 20'

*NOTE: ALL SAMPLE RESULTS GIVEN ARE FOR CHROMIUM AND ARE GIVEN IN PPM.

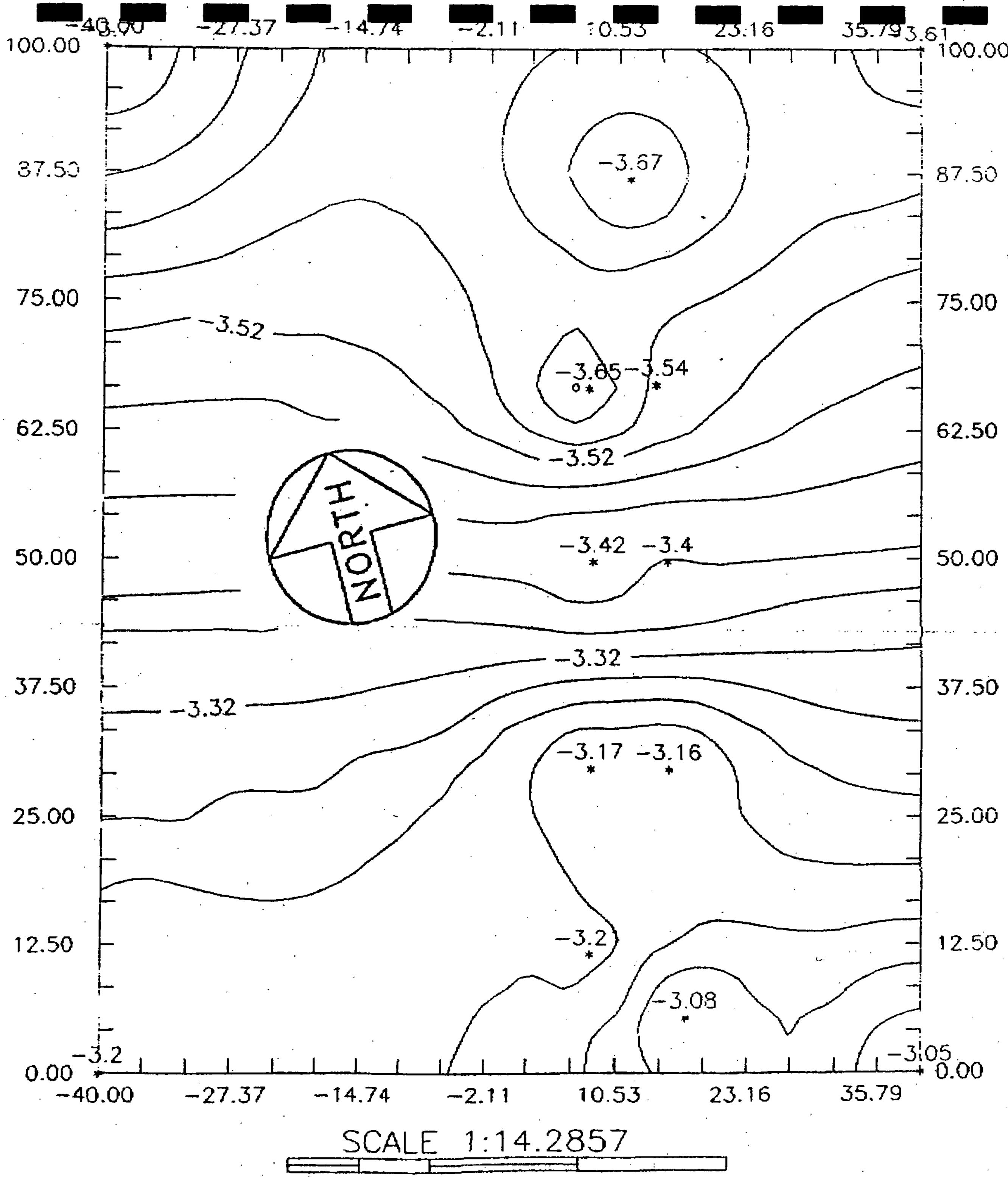


Figure 5

Groundwater Contour Map and 3-D Perspectives for the Groundwater Beneath Modern Village Development

CHROME 043 1653

#76

SUBSURFACE INVESTIGATION

FOR

MODERN VILLAGE DEVELOPMENT

383 8th Street

Jersey City, NJ

Prepared by:

Accutech Environmental Services, Inc.
Cass Street At Highway 35
Keyport, NJ 07735

April, 1990

CHROME 003 0784

SUBSURFACE INVESTIGATION
FOR
MODERN VILLAGE DEVELOPMENT

List of Figures

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1.0 INTRODUCTION

On March 15, 1990, Accutech Environmental Services, Inc. (AESI) implemented the Sampling Plan dated February 9, 1990, at the request of the NJDEP. The purpose of this sampling event was to delineate horizontally and vertically the extent of Chromium to 75 ppm. From this information a subsurface investigation was performed.

2.0 SOIL ASSESSMENT

The Engineering Soil Survey for Hudson County shown in Figure 2, classifies the soil type at Modern Village Development as F/GS. This is a general term used to describe a large area composed of natural stratified drift and urban fill. The type of soil at Modern Village Development has been determined, through the use of borings, to be Urban fill (see Appendix B).

The borings were drilled using a 4 inch stainless steel bucket auger with their locations shown in Figure 3. A total of nine borings were completed, the deepest being 5 feet below grade. Soils on this property are for the most part a black silty sand fill with pockets of ash and slag. There is an abundance of pebbles and gravel intermixed with bricks and pieces of concrete which made augering difficult.

In addition to describing the soils, AESI obtained three soil samples from each boring in order to delineate horizontally and vertically Chromium concentrations to 75 ppm.

Because there is chromium, section 7C under the Health and Safety Plan in the February 9, 1990 Sample Plan was followed. All "A" Samples were collected between 0" and 6" from the ground surface. All "B" samples were collected between 24" and 30". "C" samples were collected between 54" and 60". These samples were collected by stainless steel bucket auger. The auger was washed with Alconox and water, rinsed with DI water, and dried with paper towels between sample points. The samples were placed in 500 mL glass jars with teflon lined caps and affixed with the following label:

Accutech Environmental Services
Cass Street at Highway 35
Keyport, N.J. 07735
(201) 739-6444

COLLECTOR ______________________________

COLLECTOR'S SAMPLE #: ______________________________

PLACE OF COLLECTION ______________________________

DATE SAMPLED ______________________________

FIELD INFO: ______________________________

____

These samples were placed in a cooler for transport to All Service Testing, Franklin Technical Center, 72 Veronica Avenue, Somerset, NJ 08873. All Service is a state licensed laboratory, license #18712, and analyzed all the samples for Total Chromium under EPA Method 7190 using a Tier I protocol.

3.0 SAMPLE RESULTS

Due to obstructions encountered during boring, "C" samples were not obtained for B7 and B8. Results for Total Chromium analysis on the samples are shown below:

TABLE 1
SUMMARY OF Cr RESULTS ON SAMPLES
TAKEN ON 3/15/90
MDL = 3 ppm

Interval	Sample	Result (ppm)	Range (ppm)
0"-6"	B1A	24.3	24.3-93.4
	B2A	28.7	
	B3A	59.7	
	B4A	52.2	
	B5A	33.5	
	B6A	75.3	
	B7A	55.4	
	B8A	93.4	
	B9A	40.9	
24"-30"	B1B	12.0	12.0-57.1
	B2B	56.4	
	B3B	27.7	
	B4B	57.1	
	B5B	27.1	
	B6B	14.9	
	B7B	16.8	
	B8B	18.9	
	B9B	23.0	
54"-60"	B1C	34.6	6.5-34.6
	B2C	18.1	
	B3C	6.5	
	B4C	12.4	

TABLE 1 (con't)
SUMMARY OF Cr RESULTS ON SAMPLES
TAKEN ON 3/15/90
MDL = 3 ppm

Interval	Sample		Result(ppm)	Range (ppm)
	B5C		25.6	
	B6C		14.9	
54"-60"	B7C		---	6.5-34.6
	B8C		---	
	B9C		9.1	

These results are also shown in Figure 3 and in the Raw Data of Appendix A.

Only two samples exceeded the 75 ppm delineation level set by the Department for the Modern Village Development property. The two samples were B6A and B8A which were both surface samples. From previous sampling events, it was found that soil immediately adjacent to the building on the west side of the property contained relatively high levels of chromium. This soil has since been excavated to three feet from the building and properly disposed of. The face of the cinder block wall was covered in 30 mil polyethylene and concrete poured into the excavation in order to support the building footing. It is probable that during these activities soils with higher levels of chromium (Cr) were overlain on top of soils with much lower Cr concentrations. This would explain the rather spotty nature of surface soil containing chromium over 75 ppm. The ranges of Cr concentrations at each interval show that Cr concentrations decreases with depth. Also from the data, the higher concentrations of chromium tend to be concentrated on the western side of the property. Three delineation contour maps were created for the nine boring locations. These maps are shown in Figure 4 and are specific for each interval. The maps made for the 24"-30" interval and for the 54"-60" interval also show higher concentrations of chromium for soils on the western side of the property adjacent to the existing building.

4.0 GROUNDWATER FLOW

Groundwater flow direction was determined from depth to water data taken from the nine boring locations. This data is also found on the boring logs of Appendix B. No survey data was available to get actual elevations of the ground surface. Assuming that the flat surface of the concrete footings were all level, a string was pulled taught over the borings and anchored on the flat surface of the footings. To further insure a level line, a string level was attached to the strings. Depth to water was taken from the string to the water surface. Using this data and distances of the borings from the building, a groundwater contour map and two 3-D perspectives were made for the water table at the Modern Village Development site. All these maps are part of Figure 5.

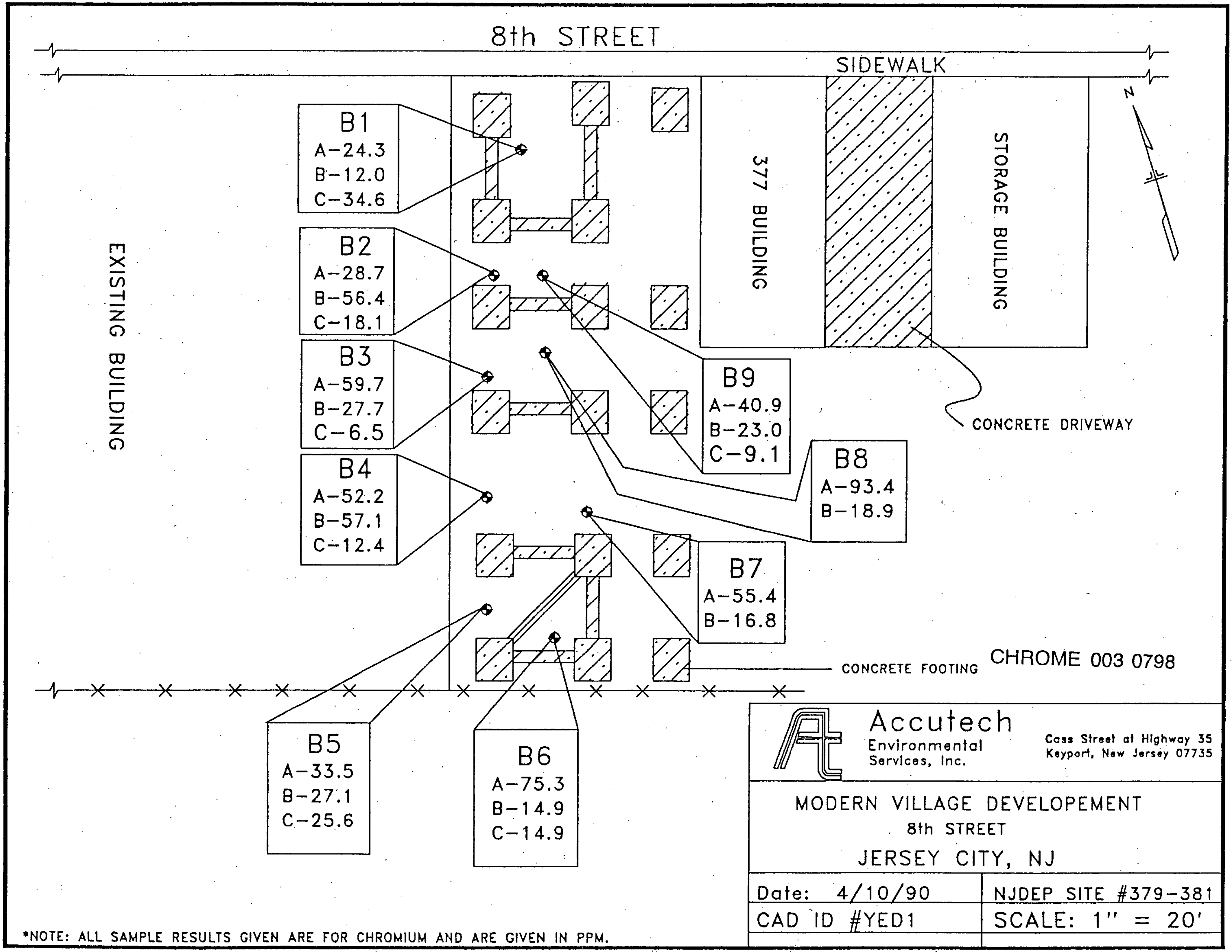
There appears to be two flow directions - one to the northeast and one to the west. Most of the shallow groundwater at the Modern Village Development site is flowing in a northeastwardly direction towards Eighth Street. The hydraulic gradient for this flow direction is 0.0089 ft/ft. The other flow direction is in a westwardly direction in the southwest corner of the site. The hydraulic gradient for this flow direction is 0.013 ft/ft.

5.0 CONCLUSIONS

The highest concentrations of chromium are found at the surface (max. concentration 93.4 ppm) probably related to the removing of soils adjacent to the building with the original chromium leaching problem. Subsurface sampling has shown that maximum chromium concentrations reach 57.1 ppm almost half the 100 ppm action limit with the concentrations decreasing with depth. The highest of the subsurface results are found in the southwest corner of the property near the building with a previously known chromium leaching problem. Soils along the side of the building have been excavated to a distance of three feet from the building and to a depth of four feet. 30 mil polyethylene covers the side of the building and concrete fills the excavation.

Soils in contact with groundwater contain Cr levels well below action levels. In addition, groundwater flow was determined. The direction is primarily in a northern direction.

Since the facts stated in this report are subject to professional interpretation, they could result in differing conclusions. In addition, the findings and conclusions contained in this report are based on various quantitative and qualitative factors as they presently exist.



8th STREET
SIDEWALK
EXISTING BUILDING
377 BUILDING
STORAGE BUILDING
N
B1
A-24.3
B-12.0
C-34.6
B2
A-28.7
B-56.4
C-18.1
B3
A-59.7
B-27.7
C-6.5
B4
A-52.2
B-57.1
C-12.4
B5
A-33.5
B-27.1
C-25.6
B6
A-75.3
B-14.9
C-14.9
B7
A-55.4
B-16.8
B8
A-93.4
B-18.9
B9
A-40.9
B-23.0
C-9.1
CONCRETE DRIVEWAY
CONCRETE FOOTING
CHROME 003 0798
Accutech
Environmental
Services, Inc.
Cass Street at Highway 35
Keyport, New Jersey 07735
MODERN VILLAGE DEVELOPEMENT
8th STREET
JERSEY CITY, NJ
Date: 4/10/90
NJDEP SITE #379-381
CAD ID #YED1
SCALE: 1" = 20'
*NOTE: ALL SAMPLE RESULTS GIVEN ARE FOR CHROMIUM AND ARE GIVEN IN PPM.

APPENDIX B

BORING LOGS

CHROME 003 0846

ACCUTECH ENVIRONMENTAL SERVICES, INC.

EXPLORATORY DRILLING LOG

LOCATION: B-1

PROJECT: Modern Village Development

PROJECT NO. 304 | SHEET 1 OF 9

	SCREEN	RISER	SAND PACK
TYPE			
DIAMETER			
LENGTH			
SLOT SIZE			

DATE COMPLETED 3/15/90

GROUND SURFACE ELEVATION

CASING ELEV. DATUM

DRILLER Accutech

PERMIT NO.

COMMENTS

GROUNDWATER DATA

DEPTH	DATE	TIME	REFERENCE PT.
4.5 ft	3/15/90	11:45 am	Ground Surface

Sample No.	DEPTH (FT)	STRATIGRAPHY	Well Construction	BLOW COUNTS	DESCRIPTION / SOIL CLASSIFICATION	REMARKS
B1A	-0-					
	-1-				Red Brown silty sand some black ash	
B1B	-2-				Black silty sand and ash with coal glass and bricks	
	-3-					
	-4-				Black silty ash with coal and glass. shingles some slag	Damp at 50"
B1C	-5-				Dark brown silty sand, some organic material.	
	-6-					
	-7-				T.D. = 5.0 ft	
	-8-					
	-9-					
	-10-					
	-11-					
	-12-					
	-13-					
	-14-					
	-15-					
	-16-					
	-17-					
	-18-					
	-19-					

CHROME 003 0847

ACCUTECH ENVIRONMENTAL SERVICES, INC.

EXPLORATORY DRILLING LOG

LOCATION: B-2

PROJECT: Modern Village Development

PROJECT NO. 304

SHEET 2 OF 9

	SCREEN	RISER	SAND PACK
TYPE			
DIAMETER			
LENGTH			
SLOT SIZE			

DATE COMPLETED 3/15/90

GROUND SURFACE ELEVATION

CASING ELEV. DATUM

DRILLER Accutech

PERMIT NO.

COMMENTS

GROUNDWATER DATA

DEPTH	DATE	TIME	REFERENCE PT.
4.5 ft	3/15/90	12:50 pm	Ground Surface

Sample No.	DEPTH (FT)	STRATIGRAPHY	Well Construction	BLOW COUNTS	DESCRIPTION SOIL CLASSIFICATION	REMARKS
B2A	-0-					
	-1-				Black silty sand and ash with occasional bricks	
B2B	-2-					
	-3-				same, but with pebbles, slag, and glass	
	-4-				Black silty sand and pebbles	Saturated
B2C	-5-					
	-6-					
	-7-				T.D. = 5.0 ft	
	-8-					
	-9-					
	-10-					
	-11-					
	-12-					
	-13-					
	-14-					
	-15-					
	-16-					
	-17-					
	-18-					
	-19-					

CHROME 003 0848

ACCUTECH ENVIRONMENTAL SERVICES, INC.

EXPLORATORY DRILLING LOG

LOCATION: B-3

PROJECT: Modern Village Development

PROJECT NO. 304

SHEET 3 OF 9

	SCREEN	RISER	SAND PACK
TYPE			
DIAMETER			
LENGTH			
SLOT SIZE			

DATE COMPLETED 3/15/90

GROUND SURFACE ELEVATION

CASING ELEV. DATUM

DRILLER Accutech

PERMIT NO.

COMMENTS

GROUNDWATER DATA

DEPTH	DATE	TIME	REFERENCE PT.
4.5 ft	3/15/90	1:35 pm	Ground Surface

Sample No.	DEPTH (FT)	STRATIGRAPHY	Well Construction	BLOW COUNTS	DESCRIPTION SOIL CLASSIFICATION	REMARKS
B3A	-0-					
	-1-				Black silty sand and ash with occasional bricks	
B3B	-2-					
	-3-					
	-4-				Black silty sand and pebbles	Saturated
B3C	-5-					
	-6-					
	-7-				T.D. = 5.0 ft	
	-8-					
	-9-					
	-10-					
	-11-					
	-12-					
	-13-					
	-14-					
	-15-					
	-16-					
	-17-					
	-18-					
	-19-					

CHROME 003 0849

ACCUTECH ENVIRONMENTAL SERVICES, INC.

EXPLORATORY DRILLING LOG

LOCATION: B-4

PROJECT: Modern Village Development

PROJECT NO. 304

	SCREEN	RISER	SAND PACK
TYPE			
DIAMETER			
LENGTH			
SLOT SIZE			

DATE COMPLETED 3/15/90

GROUND SURFACE ELEVATION

CASING ELEV. DATUM

DRILLER Accutech

PERMIT NO.

COMMENTS

GROUNDWATER DATA

DEPTH	DATE	TIME	REFERENCE PT.
4.5 ft	3/15/90	2:15 pm	Ground Surface

Sample No.	DEPTH (FT)	STRATIGRAPHY	Well Construction	BLOW COUNTS	DESCRIPTION SOIL CLASSIFICATION	REMARKS
B4A	-0-					
	-1-				Black silty sand with gravel and pebbles	
B4B	-2-					
	-3-					
	-4-				Black silty sand and pebbles	Saturated
B4C	-5-					
	-6-					
	-7-				T.D. = 5.0 ft	
	-8-					
	-9-					
	-10-					
	-11-					
	-12-					
	-13-					
	-14-					
	-15-					
	-16-					
	-17-					
	-18-					
	-19-					

CHROME 003 0850

ACCUTECH ENVIRONMENTAL SERVICES, INC.

EXPLORATORY DRILLING LOG

LOCATION: B-5

PROJECT: Modern Village Development

PROJECT NO. 304

SHEET 5 OF 9

	SCREEN	RISER	SAND PACK
TYPE			
DIAMETER			
LENGTH			
SLOT SIZE			

DATE COMPLETED 3/15/90

GROUND SURFACE ELEVATION

CASING ELEV. DATUM

DRILLER Accutech

PERMIT NO.

COMMENTS

GROUNDWATER DATA

DEPTH	DATE	TIME	REFERENCE PT.
4.5 ft	3/15/90	4:00 pm	Ground Surface

Sample No.	DEPTH (FT)	STRATIGRAPHY	Well Construction	BLOW COUNTS	DESCRIPTION SOIL CLASSIFICATION	REMARKS
B5A	-0-				Orange sandy clay fill	
	-1-					
B5B	-2-				Black silty sand with many cobbles and pebbles	
	-3-					
	-4-				Black silty sand and pebbles	Saturated
B5C	-5-					
	-6-					
	-7-				T.D. = 5.0 ft	
	-8-					
	-9-					
	-10-					
	-11-					
	-12-					
	-13-					
	-14-					
	-15-					
	-16-					
	-17-					
	-18-					
	-19-					

CHROME 003 0851

ACCUTECH ENVIRONMENTAL SERVICES, INC.

EXPLORATORY DRILLING LOG

LOCATION: B-6

PROJECT: Modern Village Development

PROJECT NO. 304

SHEET 6 OF 9

	SCREEN	RISER	SAND PACK
TYPE			
DIAMETER			
LENGTH			
SLOT SIZE			

DATE COMPLETED 3/15/90

GROUND SURFACE ELEVATION

CASING ELEV. DATUM

DRILLER Accutech

PERMIT NO.

COMMENTS

GROUNDWATER DATA

DEPTH	DATE	TIME	REFERENCE PT.
4.5 ft	3/15/90	4:40 pm	Ground Surface

Sample No.	DEPTH (FT)	STRATIGRAPHY	Well Construction	BLOW COUNTS	DESCRIPTION SOIL CLASSIFICATION	REMARKS
B6A	-0-					
	-1-				Black silty sand with numerous cobbles and glass	
B6B	-2-				same, but with much slag	
	-3-					
	-4-				much more grey ash	Saturated
B6C	-5-					
	-6-					
	-7-				T.D. = 5.0 ft	
	-8-					
	-9-					
	-10-					
	-11-					
	-12-					
	-13-					
	-14-					
	-15-					
	-16-					
	-17-					
	-18-					
	-19-					

CHROME 003 0852

ACCUTECH ENVIRONMENTAL SERVICES, INC.

EXPLORATORY DRILLING LOG

LOCATION: B-7

PROJECT: Modern Village Development

PROJECT NO. 304

SHEET 7 OF 9

	SCREEN	RISER	SAND PACK
TYPE			
DIAMETER			
LENGTH			
SLOT SIZE			

DATE COMPLETED 3/15/90

GROUND SURFACE ELEVATION

CASING ELEV. DATUM

DRILLER Accutech

PERMIT NO.

COMMENTS

GROUNDWATER DATA

DEPTH	DATE	TIME	REFERENCE PT.
	3/15/90		Ground Surface

Sample No.	DEPTH (FT)	STRATIGRAPHY	Well Construction	BLOW COUNTS	DESCRIPTION SOIL CLASSIFICATION	REMARKS
B7A	-0-					
	-1-				Black silty sand with numerous cobbles and glass	
B7B	-2-				Much slag and brick	
	-3-					
	-4-				Refusal on brick at 44"	
	-5-					
	-6-					
	-7-					
	-8-					
	-9-					
	-10-					
	-11-					
	-12-					
	-13-					
	-14-					
	-15-					
	-16-					
	-17-					
	-18-					
	-19-					

CHROME 003 0853

ACCUTECH ENVIRONMENTAL SERVICES, INC.

EXPLORATORY DRILLING LOG

LOCATION: B-8

PROJECT: Modern Village Development

PROJECT NO. 304

	SCREEN	RISER	SAND PACK
TYPE			
DIAMETER			
LENGTH			
SLOT SIZE			

DATE COMPLETED 3/15/90

GROUND SURFACE ELEVATION

CASING ELEV. DATUM

DRILLER Accutech

PERMIT NO.

COMMENTS

GROUNDWATER DATA

DEPTH	DATE	TIME	REFERENCE PT.
	3/15/90		Ground Surface

Sample No.	DEPTH (FT)	STRATIGRAPHY	Well Construction	BLOW COUNTS	DESCRIPTION SOIL CLASSIFICATION	REMARKS
B8A	-0-					
	-1-				Refusal at 1 ft. tried five different locations but still had refusal on concrete	
B8B	-2-					
	-3-				Refusal at 30"	
	-4-					
	-5-					
	-6-					
	-7-					
	-8-					
	-9-					
	-10-					
	-11-					
	-12-					
	-13-					
	-14-					
	-15-					
	-16-					
	-17-					
	-18-					
	-19-					

CHROME 003 0854

ACCUTECH ENVIRONMENTAL SERVICES, INC.	EXPLORATORY DRILLING LOG	LOCATION: B-9

PROJECT: Modern Village Development

PROJECT NO. 304 — SHEET 9 OF 9

	SCREEN	RISER	SAND PACK
TYPE			
DIAMETER			
LENGTH			
SLOT SIZE			

DATE COMPLETED 3/15/90

GROUND SURFACE ELEVATION

CASING ELEV ______ DATUM ______

DRILLER Accutech

PERMIT NO.

COMMENTS

GROUNDWATER DATA

DEPTH	DATE	TIME	REFERENCE PT.
4.5 ft	3/15/90	12:30 pm	Ground Surface

Sample No.	DEPTH (FT)	STRATIGRAPHY	Well Construction	BLOW COUNTS	DESCRIPTION / SOIL CLASSIFICATION	REMARKS
B9A	-0-					
	-1-					
					Black silty sand with ash, slag, and bricks	
B9B	-2-					
	-3-					
	-4-				Black silty sand with organic material and ash	
B9C	-5-					
	-6-					
	-7-				T.D. = 5.0 ft	
	-8-					
	-9-					
	-10-					
	-11-					
	-12-					
	-13-					
	-14-					
	-15-					
	-16-					
	-17-					
	-18-					
	-19-					

CHROME 003 0855

ATTACHMENT P

MAY - 8 1990

APRIL 7, 1990

SITE 76

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
CN 028 FIFTH FLOOR
TRENTON, NJ 08625-0028
ATT: FRANK FARANCA
RE: 379-381 EIGHTH STREET, JERSEY CITY, NJ

DEAR FRANK,

AS PER OUR PHONE CONVERSATION OF APRIL 30, 1990, YOU AND YOUR STAFF HAVE REVIEWED THE TEST RESULTS ON THE DIRT FROM THE ABOVE MENTIONED PROPERTY AND HAVE FOUND IT TO BE "CLEAN" ACCORDINGTO NJ DEP'S STRINGENT STANDARDS. ACCORDING TO YOUR INSTRUCTIONS, WE ARE PROCEEDING TO POUR THE CONCRETE SLAB AND COMPLETE THE CONSTRUCTION PROJECT. WE HAVE ENCLOSED PICTURES OF THE PLACEMENT OF A VAPOR BARRIER OVER THE DIRT TOGETHER WITH A LETTER FROM ITS MANUFACTURER REGARDING ITS QUALITY.

WE ARE AWAITING YOUR LETTER CLEARING THE PROPERTY AS AN ADJACENT CHROMIUM SITE.

SINCERELY YOURS,

Carl Yedibalian

CARL YEDIBALIAN

ENCLOSURES

CHROME 003 0655

ATTACHMENT Q

Let's protect our earth

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
CN 028
Trenton, N.J. 08625-0028
(609) 633-1408
Fax # (609) 633-1454

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
NO. P 101 604 799

08 MAY 1990

Mr. Carl Yedibalian
Modern Village Development Corporation
377 Eighth Street
Jersey City, NJ 07302

Dear Mr. Yedibalian:

Re: 379-381 Eighth Street
Jersey City, New Jersey
Chromate Chemical Waste Site #76

CHROME 082 0807

The New Jersey Department of Environmental Protection (Department) has reviewed the Subsurface Investigation - Modern Village Development Corporation (MVDC) prepared by Accutech Environmental Services, Inc. on behalf of MVDC and dated April 1990. This investigation was performed based upon the Department's Phase II chromium study which indicated the potential for chromium contamination. The Department has determined that the excavation, classification and disposal of residual chromate contaminated soils have met the Department's requirements as evidenced in the analytical results of the post excavation subsurface investigation. In addition, the installation of the "Permalon" liner beneath the concrete foundation and adjacent to the footing along the west side of the proposed warehouse shall preclude any future recontamination. Therefore, the property located at 379-381 Eighth Street (Chromate Chemical Production Waste Site 76) is no longer considered a chromate chemical production waste site and has been removed from the Department's list of such sites. The adjacent property located at 383 Eighth Street at which there is existing chromate chemical contamination shall remain on the list.

Should you have any questions on this matter, please contact me at (609) 633-1480.

Sincerely,

Frank Faranca

Frank Faranca, Case Manager
Responsible Party Cleanup Element

sw

c. Ronald T. Corcory, DHWM/RPCE
Thomas McKee, DHWM/RPCE
Steve Weber, DHWM/RPCE
David Barskey, DHSM/BEERA
Tedd Ronning, DWR/BGWPA
George Tamaccio, DHSM/BCR
Jeanne Mroczko, DPP
Jerry Nissen, Jersey City Engineering

ATTACHMENT R

REMEDIAL INVESTIGATION REPORT

Modern Village Development
383 8th Street
Tax Lot: 28, Tax Block 417
Tax Lot: 33, Tax Block 417
Jersey City, Hudson County, New Jersey

Prepared for:

Mr. Carl Yedibalian
379-381 8th Street
Jersey City, New Jersey 07303

Prepared by:

AccuTech Environmental Services, Inc.
Cass Street and Highway 35
Keyport, New Jersey 07735
Phone: 908/739-6444 Fax: 908/739-0451

MJL

Michael J. Lasko
Environmental Specialist
NJDEP UST #003066

N. Bret Fischer, P.G.
Technical Director
NJDEP UST #001074

October 3, 1995

SITE INVESTIGATION REPORT

Modern Village Development
383 8th Street
Tax Lot: 28, Tax Block: 417
Tax Lot 33, Tax Block: 417
Jersey City, Hudson County, New Jersey

Table of Contents

List of Figures

1.0 INTRODUCTION

AccuTech Environmental Services, Inc. (AccuTech) has prepared this *Site Investigation Report (SIR)* in response to a New Jersey Department of Environmental Protection (NJDEP) agreement to investigate the chromium impacted fill material at the Modern Village Development (MVD) site located at 383 8th Street, Tax Lot: 28, Tax Block: 417, Jersey City, Hudson County, New Jersey. A USGS site location map is included as Figure 1. This *SIR* will be conducted in accordance with the NJDEP's *Technical Requirements for Site Remediation* (*TRSR*) (N.J.A.C. 7:26 E), and the NJDEP's *Field Sampling Procedures Manual* (*FSPM*).

In March 1990, AccuTech implemented a subsurface investigation at the MVD site to document chromium levels within the fill material. The subsurface investigation included the advancement of nine (9) soil borings at various locations throughout the MVD site. This SIR discusses in detail, a summary of the March 1990 subsurface investigation. In addition, Section 2.0 - Physical Setting provides a background of the MVD site ecology, topography and hydrogeology. The quality assurance project plan is summarized in Section 3.0. Section 5.0 is the proposed sampling plan for further characterization of the MVD site.

During the subsurface investigation, AccuTech collected three (3) samples from each boring to delineate both horizontally and vertically, chromium concentrations. The soil sampling procedures and laboratory results of the subsurface investigation are more fully discussed in Section 4.0 - Technical Overview. A summary of the proposed chromium sampling plan for the site investigation is discussed in Section 5.0.

2.0 PHYSICAL SETTING

The following presents a description of the physical setting for the MVD site, including the soils, geology and hydrogeology. Information used in developing this section was obtained from the following sources:

1. *Subsurface Investigation Report* prepared by AccuTech Environmental Services, Inc., dated March 8, 1990.

2. *Engineering Soil Survey for Hudson County*

2.1 Soil Description

According to the *Engineering Soil Survey of Hudson County*, natural soils at the MVD site were deposited as glacial stratified drift during the Wisconsin glaciation. These soils are assorted, relatively homogeneous materials, consisting mostly of sand, silt, gravel and sometimes clay. These materials usually occur in rough layers, or beds, of varying thickness and extent. This red-brown drift is composed mainly of quartz and sandstone derived from local lithology. In areas where the natural soils have been cut and filled, the soil classification is identified as "Urban Land." During the subsurface investigation, the soils at the MVD site have been classified through the series of borings to be "Urban Fill".

2.2 Geology and Hydrogeology

The MVD site is located within the Piedmont Physiographic province and is underlain by sedimentary and igneous rocks of the Triassic Newark Super Group. These rocks are preserved in a northeast-southwest trending basin that formed in response to extensional rifting during the opening of the Atlantic Ocean. The basin is approximately 140 miles long and a maximum of 32 miles wide, along the Delaware River. The thickest stratigraphic units occur on the western side of the basin as a result of normal faulting. Within the basin, Newark Group Strata lie unconformably on the Paleozoic and Precambrian rocks of the Blue Ridge and Piedmont provinces. A series of faults, along the northwest edge of the Newark Basin, form the boundary with the Highlands Province. Along the southeastern margin, the basin is overlapped by unconsolidated sediments of the Coastal Plain province.

Ground water in the aquifer beneath the subject site occurs in intergranular openings of unconsolidated stratified deposits of Quaternary Age and in joints and fractures in consolidated rock of Triassic Age. The openings that contain ground water decrease in size and number with increasing depth.

The Passaic Member of the Brunswick Group is one of the most important aquifers in Bergen County. Tabular aquifers and aquitards characterize the Passaic Member. The water-bearing fractures in each aquifer are nearly continuous, but hydraulic connection between aquifers is generally poor. These tabular aquifers generally extend down, dip for a few hundred feet, and are continuous along strike for thousands of feet. Ground-water flow in the Passaic Member is controlled by variations in lithology and fracture patterns within individual units. The sandstone units contain vertical large-scale fractures that form acute angles to the strike of the beds.

4.0 TECHNICAL OVERVIEW

The following presents a technical overview of the March 1990 subsurface investigation and laboratory analytical results. The *Subsurface Investigation Report* dated March 8, 1990 is located as Appendix A.

4.1 Historical Sampling

The soils at the MVD site have been identified through soil borings and observations made in the field to be "Urban Fill." A total of nine borings were completed using a 4-inch stainless steel bucket auger; the deepest extending 5 feet below grade, the 0-6-inch interval above ground water. Soils at the MVD site are a black, silty sand fill with pockets of ash and slag. There is an abundance of pebbles and gravel intermixed with bricks and pieces of concrete.

In addition to classifying soils at the site, AccuTech collected three soil samples from each boring in order to characterize the horizontal and vertical extent of chromium impacted fill material. All samples designated "A" were collected from the 0-6-inch interval from below ground surface (BGS). All "B" samples were collected between 24-inch and 30-inch depth BGS. "C" samples were collected from the 54-inch through 60-inch depth BGS. These samples were collected using a stainless steel hand auger. The auger was properly decontaminated between sample collection efforts.

AllService Testing of Somerset, New Jersey, an NJDEP certified laboratory analyzed the samples for total chromium under EPA Method 7190. Results from the sampling are summarized in Table 1.

Table 1

Laboratory Analytical Results March 1990

Sample Collection Interval (inches)	*Sample ID*	*Concentration (ppm)*
0"-6"	B1A	46.7
	B2A	28.0
	B3A	77.7
	B4A	62.2
	B5A	36.4
	B6A	22.1
	B7A	**154**
	B8A	45.7
	B9A	25.4
24"-30"	B1B	11.5
	B2B	9.5
	B3B	14.7
	B4B	20.9
	B5B	32.8
	B6B	13.4
	B7B	18.6
	B8B	12.3
	B9B	20.7
54"-60"*	B1C	32.2
	B3C	2.9
	B4C	8.2
	B5C	17.5
	B6C	13.0

*Subsurface obstructions prevented sample collection from locations B2, B7, B8 and B9

Laboratory analytical results identified two samples that exceeded the NJDEP's then enforced action limit of 75 parts per million total chromium. The two samples, B3A and B7A, were both surface samples. From previous sampling events, relatively high levels of chromium were found within the soil immediately adjacent to the building on the west side of the MVD site. This soil has since been excavated three feet from the building and lined with polyethylene lining. The polyethylene lining is placed throughout the soil excavation. In addition, the excavated soils were placed in a roll-off container on site for subsequent off-site disposal under NJDEP direction.

The range of chromium concentrations at each interval, i.e., "A," "B," or "C" indicate that chromium concentrations decrease with depth. The data also identified higher concentrations of chromium on the southwest side of the MVD site. Three contour maps detailing contaminant concentrations were created from the nine boring locations. The maps presented as Figure 2 in the *Subsurface Investigation Report* provided in Appendix A are specific for each depth interval. The maps made for the 24-30" interval and for the 54-60" interval identify elevated concentrations of chromium for soils on the southwest side of the MVD site. The following section (5.0 - Sampling Plan) discusses in detail the proposed sampling plan.

5.0 SAMPLING PLAN

The purpose of the sampling plan is to further characterize chromium impacted fill material at the MVD site. Characterization of subsurface soils at the MVD site will be implemented according to the *TRSR* section N.J.A.C. 7:26E-3.6 that discusses in detail, the site investigation of soils. Specifically, nine (9) soil borings will be extended to the water table at the previous sample location identified as B-1 through B-9. Actual number of borings and samples will be field determined. Figure 2 depicts the sample locations. The following factors have determined the number and location of samples proposed for the site:

- Exposure pathways
- Statistical performance objectives
- Quality assurance objective
- Sampling objectives
- Site specific conditions
- Determination if chromium contamination has migrated from the existing building to the adjacent lot.

Samples will be collected in discrete six-inch increments no deeper than the groundwater table that is estimated at five feet below grade. Based on field observations, a total of three (3) discrete samples from each soil boring will be collected for analysis. Specifically, samples collected from 0-6-inch increment below the ground surface will be designated "A"; samples collected below 24-30-inch depth below ground surface will be designated "B"; and samples collected 54-60-inch depth below grade will be designated "C." Sampling instruments will be decontaminated following the procedures outlined in Section 3.0 - Quality Assurance Project Plan. All samples will be analyzed for total and hexavalent chromium. In addition, split samples collected may be taken with NJDEP representatives, if desired.

All sample results will be compared to the following standards:

Table 2
Chromium Standards

Parameter	*NJDEP¹*	*NJDEP²*
Chromium	500	10

All results are in parts per million (ppm)
NJDEP¹ = Total Chromium
NJDEP² = Hexavalent Chromium (Cr^{+6})

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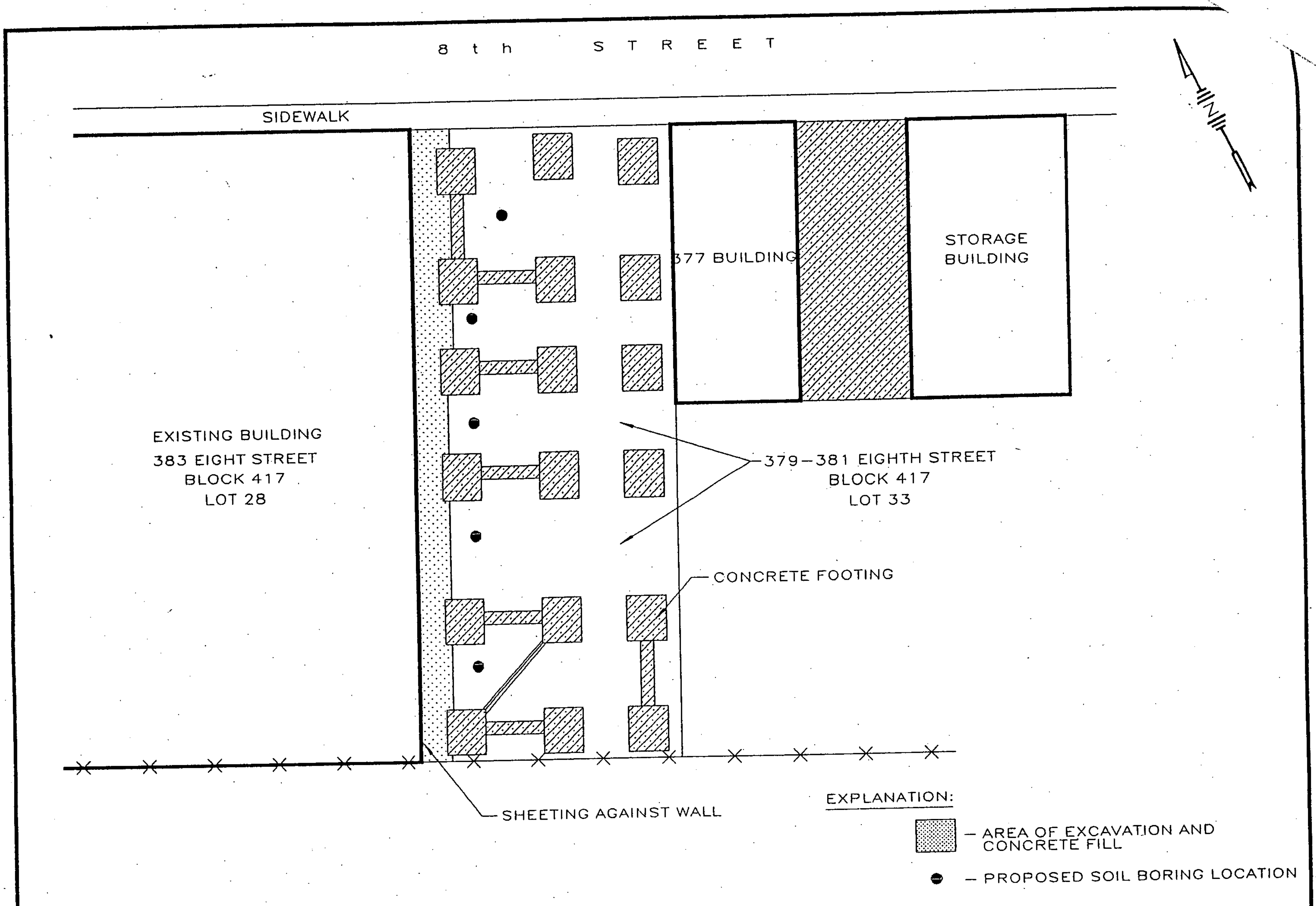

Accutech
Environmental Services, Inc.
Cass Street @ Highway 35
Keyport, NJ 07735 (908) 739-6444

MODERN VILLAGE DEVELOPMENT
8th STREET
JERSEY CITY, NEW JERSEY

DATE: 10-3-95
SCALE: 1" = 20'
DRAWING #: 95-342
DRAWN BY: JEB

ATTACHMENT S

FINAL
BACKGROUND INVESTIGATION REPORT
SITE 077 - EIGHTH STREET

for

REMEDIAL INVESTIGATION
CONTRACT A-78384

HUDSON COUNTY CHROMATE ORPHAN SITES
GROUP 1
HUDSON COUNTY, NEW JERSEY

Prepared for:

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF PUBLICLY FUNDED SITE REMEDIATION
TRENTON, NEW JERSEY

Prepared by:

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ARCHITECTS AND ENGINEERS, INC.
Pleasantville, NJ Ebensburg, PA

January, 1998

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1.0 INTRODUCTION

L. Robert Kimball & Associates, Inc., (LRKA) was retained by the New Jersey Department of Environmental Protection to conduct Remedial Investigations (RI) at fifteen (15) orphan chromate chemical production waste sites located in Bayonne and Jersey City, New Jersey. This Background Investigation Report was prepared to address Site 077, known as the Eighth Street Site, of the Hudson County Chromate Chemical Production Waste Sites.

The procedures used in the preparation of this report are based on the project scope-of-services and the NJDEP Technical Requirements for Site Remediation. LRKA completed review of records held by the NJDEP Bureau of Site Remediation, NJDEP Central Files, NJDEP Division of Law, NJDEP - Tidelands Management Program, New Jersey Department of Health, City of Jersey City - Engineering Department, Jersey City Public Library, and the Hudson County Property and Tax Records offices.

Information obtained from these records were collated and reviewed for continuity, basis of fact, and consistency. Once the majority of information was reviewed, a Site Reconnaissance was performed to observe physical layout and descriptions used in historical records. Historical mapping products and aerial photographs were used to better identify the physical descriptions included in the records, and to add to the reviewers descriptions of findings.

Section 1 is the introduction which outlines the project purpose, objectives, site location and description. Section 2 provides the environmental setting for the site and adjacent properties and discusses site specific information relevant to the remedial investigation activities scheduled for this site. Section 3 provides the results of our preliminary site reconnaissance efforts. Section 4 outlines the various areas of environmental concern associated with the site, and Section 5 provides a model which evaluates the nature of the problem. Section 6 presents a listing of references used to prepare this report.

1.1 Purpose

The purpose of this report is to provide background information obtained relative to sources and extent of contamination on and adjacent to the site. This information in turn is needed to develop and examine the physical and chemical characteristics of the site.

1.2 Objective

The objectives of this investigation are to become familiar with the information and data generated previously on the site; identify data and information needs for planning and performance of the Remedial Investigation (RI) and development of the Field Sampling Plan and Quality Assurance Project Plan (FSP-QAPP) and Site Specific Work Plan (SSWP); and to prepare a summary of the site information for use in the various project reports and community relations activities.

1.3 Site Location and Description

Site 077 (Eighth Street) is an approximate 2500 square feet, fully developed lot containing a one (1) story brick and block warehouse building located at 383 Eighth Street, Jersey City, Hudson County, New Jersey. Figure 1 - Site Location Map depicts the site location relative to the eastern sector of the City of Jersey City.

According to the Tax Map of Jersey City and the Tax Assessors Records, the property is identified as one (1) parcel of land designated as Block 417, Lot 28 owned by Modern Village Development Corporation (MVDC). Figure 2 - Tax Map of Jersey City presents a portion of the tax map which covers the general site area including the property of concern and adjoining properties included in this study as additional properties of concern. Figure 3 - Site Layout Map shows the property located along the south side of Eighth Street.

1.4 History of Property Ownership

Records of ownership for the past 76 years were identified. The Block, Lot, Parcel Numbers, and current ownership for the properties within the site boundary include:

Block	Lot	Current Ownership
417	28	Modern Village Development Corp.

Information regarding additional properties adjacent to Site 077 that may be included in the investigation include:

Block	Lot	Current Ownership
417	33 (formerly Lots 29 & 30)	Yedibalian T/A M & S
417	13 & 14	Angelina & Gelina Demio
417	U	William & Marie Ranieri
417	T	Josephine Loricchio
417	S	Rolf Burkand
417	R	Margaret Pandolflo
417	27	Daniel & Linda Johnson
Eighth Street Right-of-Way		City of Jersey City

1.4.1 Ownership

The following is a chronological summary of the recorded property transactions related to Site 077, located at 383 Eighth Street, Jersey City, NJ, referred to by Block 417, Lot 28 as defined on the Jersey City tax map.

Date of Transfer	Buyer(s)	Deed Book & Page
Unknown	Lena Reppenhagen	
May 7, 1920	John B. Gray and Margaret P. Gray	1360 page 242
March 22, 1921	Antonio De Luca	1394 pages 355-357
Unknown	Willed to Filomena and Samuel Annitto	
June 30, 1947	City of Jersey City	2251 page 275
April 7, 1948	Anthony J. and Mary DeBlosio	2301 page 307
May 29, 1953	John Sarrao	2551 page 180
September 15, 1970	Michael V. De Blosio	3086 page 749
Unknown	Joseph A. and Rita DeBlosio	
November 11, 1975	William A. and Margaret M. Carr	3199 Page 856
September 26, 1985	Kaloust Yedibalian Lots 28, 29, & 30	3470, page 1014
October 14, 1988	Modern Village Development Corp. Lot 28 only	4063 page 294

2.0 ENVIRONMENTAL SETTING

Jersey City is part of a large urban area which includes New York City to the east, Newark, New Jersey to the west, smaller municipalities to the north and Bayonne to the south. Major rail and highway routes that connect New York City with points to the west and south pass through Jersey City. Jersey City and Bayonne are situated on a peninsula that lies between the Hackensack River and Newark Bay to the west and the Hudson River and Upper New York Bay to the east.

2.1 Geology and Soils

2.1.1 Regional Geology and Soils

Jersey City, as well as the rest of Hudson County, is located on the southeastern edge of the Newark Basin in the Piedmont Plain of the Appalachian Physiographic Province. The Newark Basin was formed during the Late Triassic and Early Jurassic geologic periods and was subsequently filled with primarily terrestrial sediments. These sediments became the formations of the Newark Group. The sedimentary deposits of the Newark Group are comprised mainly of mudstones, terrestrial shales, siltstones and sandstones with lesser conglomerates. Jersey City is predominantly underlain by the Stockton Formation, which is the oldest formation of the Newark Group. The Stockton Formation is comprised of gray arkose (sandstone), conglomerates and red shales. However, the Manhattan Schist Formation has been mapped underlying the eastern portion of Jersey City. The Palisades Diabase intruded up, into and through the Stockton Formation throughout much of Hudson County, and formed an elongated coarse-grained quartz-diabase sill. Figure 4 - Primary Geologic Formations of Hudson County, New Jersey shows the specific geologic formations underlying Hudson County, NJ.

Northern New Jersey was affected by the Pleistocene glaciation with the maximum advance of the ice over northern New Jersey during the Wisconsin glaciation. The terminal moraine deposited as the glacier receded is located to the south of Jersey City, stretching through Perth Amboy, Staten Island and western Long Island. The glaciers left large quantities of sediments as both unstratified drift and as stratified sediments redeposited in fluvial, lucastrine and deltaic environments. The glacial drift is thinnest over the Palisades Ridge and thickest to the east and west of the ridge in what were once glacial lakes.

In the low lying areas around Jersey City, tidal marshes formed above the glacial till. Clay and silt layers and layers of peat, which are frequently referred to as meadow mat, comprise the sediments of the salt marshes. The tidal marsh deposits formed adjacent to the Hackensack and Hudson Rivers and the Newark and Upper New York Bays. Most of the marshes in the area have been filled, however the Hackensack Meadowlands which are to the north and west of Jersey City remains as a large salt marsh.

Fill material is prevalent throughout Jersey City, as it was used to raise ground elevations above water levels and reclaim wetlands for development. Large areas of Newark Bay and Upper New York Bay were also filled to create areas suitable for development. Fill material may be comprised of a wide variety of materials such as clay, silt, sand, dredged sediment and debris, and waste material such as ash, cinders, bricks, asphalt, plastics and other assorted materials.

2.1.2 Site Geology and Soils

A subsurface investigation in March, 1990, by Accutech Environmental Services, Inc., (AESI) for Modern Village Development Corporation described soils within five (5) feet of ground surface on the property as black silty sand fill with pockets of ash and slag. An abundance of pebbles and gravel intermixed with bricks and pieces of concrete was also noted.

Although not visibly evident, the site is situated on relatively level lands east of the Palisades reported for the local area to lie atop glacial sediments and the Stockton sands and shales with periodic diabase intrusions. The depth to naturally occurring unconsolidated materials is unknown.

2.2 Hydrogeology

2.2.1 Regional Hydrogeology

The Stockton Formation is a locally important aquifer with wells that produce between several gallons per minute (gpm) to several hundred gpm. The majority of these wells are believed to be production wells serving as non-potable water sources. The glacial sediments and the fill contain groundwater, but these deposits have low yields and poor quality. The sediments in the local are not viewed as significant water sources, but do provide a source of recharge to the deeper aquifers and transport water to surrounding water bodies, which in the case for this site includes the Hudson River. Further east of the site, salt water intrusion can be expected in shallow water–bearing zones adjacent to the Hudson River, Raritan Bay and the Atlantic Ocean.

2.2.2 Site Hydrogeology

A subsurface investigation in March, 1990, by Accutech Environmental Services, Inc., (AESI) for Modern Village Development Corporation described encountering shallow groundwater within three (3) to four (4) feet below the surface of the building foundations. A groundwater assessment prepared by AESI found the general groundwater flow to be in a northerly direction toward Eighth Street. However, no survey data was available to get actual elevations of the groundwater surface resulting in limited usefulness of the data.

2.3 Topography

The surface topography of Hudson County is dominated by a north-south trending, hard bedrock ridge known as Palisades Ridge. This ridge is an erosional remnant of the Newark Group dominated by the resistant Palisades Diabase. The ridge, which runs the length of the peninsula, ranges in elevation from one-hundred and seventy (170) feet above mean sea level (msl) at the northern end of the Jersey city to fifty (50) feet above msl near the site, and dips below sea level to the south of Bayonne where the Kill Van Kull separates the City of Bayonne from Staten Island. The bays on each side of Jersey City are drowned river valleys flooded when sea level rose following the Pleistocene Epoch. On each side of the Palisades Ridge, the land is relatively flat due to the easier erosion of the Stockton Formation, the natural infilling with glacial till, and extensive filling of the lowlands for development. Site 077 is situated in the relatively flat lands east of the Palisades Ridge.

Site 077 and properties immediately adjacent to the site are covered by buildings. Nearby undeveloped residential and commercial land areas are at the same approximate surface elevations as Eighth Street. No specific grades are evident.

2.4 Surface Drainage Patterns

Most of the surface water in Hudson County is part of the Hudson Estuary. This estuary includes the Hackensack and Passaic Rivers which combine to form the Newark Bay to the west of Jersey City, and the Hudson River which widens into the Upper New York Bay to the east. The Palisades Ridge divides the surface drainage into westward flow into the Newark Bay and eastward flow into the Upper New York Bay. However, most of the surface water is diverted into catch basins and into the combined sewer system of this urban area. There are a few small, unnamed tidally influenced streams along the shore, but most of these have been created or heavily influenced by development.

Figure 5 - Floodprone Areas of Hudson County, New Jersey, shows that the site is not located in a floodprone area. The National Flood Insurance Program Flood Insurance Rate Map for Jersey City (City of Jersey City, 1983) shows the site designated as being in the 100-year flood boundary with a flood hazard factor of five (5) and a base flood elevation of ten (10) feet (Zone A5) on community panel 340223 0003B. A portion of the Flood Insurance Rate Map for Site 077 has been included in Appendix B.

Surface drainage for the site is most likely influenced by the northerly sloped surface topography and the presence of the large warehouse. The majority of surface water and precipitation falling on the site likely runs north into municipal storm sewers constructed in Eighth Street.

2.5 Ecology

2.5.1 Rare and Endangered Species and Habitats in Hudson County

The New Jersey Natural Heritage Program (NJNHP), a joint program between The Nature Conservancy and the NJDEP, maintains a computer database of rare plants, animal species, and representative natural communities in the state of New Jersey. The NJNHP has no records of rare plants, animals, or natural communities within the Site 077 study area. However, a total of thirty-three (33) rare species and natural communities are presently recorded in the New Jersey Natural Heritage Database for Hudson County, New Jersey. The Office of Natural Lands Management letter dated March 19, 1997 in Appendix C provides a listing of these thirty-three (33) rare species and natural communities presently recorded in the New Jersey Natural Heritage Database.

The U.S. Department of the Interior, Fish and Wildlife Service has listed ten (10) animal species and five (5) plant species as endangered and threatened species in New Jersey. These plant and animal species include the following:

Animals - Ten (10) Species

Name	Common Name
Myotis sodalis	Bat, Indiana
Cicindela dorsalis dorsalis	Beetle, Northeastern Beach Tiger
Haliaeetus leucocephalus	Eagle, Bald
Falco peregrinus anatum	Falcon, American Peregrine
Charadrius melodus	Plover, Piping
Sterna dougallii dougallii	Tern, Roseate
Lepidochelys kempii	Turtle, Kemp's
Eretmochelys imbricata	Turtle, Hawksbill Sea
Dermochelys coriacea	Turtle, Leatherback Sea
Caretta caretta	Turtle, Loggerhead Sea

Plants - Five (5)

Name	Common Name
Aeschynomene virginica	Sensitive Joint-Vetch
Helonias bullata	Swamp Pink
Isotria medeoloides	Small Whorled Pogonia
Rhynchospora knieskernii	Knieskern's Beaked-Rush
Schwalbea americana	American Chaffseed

2.5.2 Ecological Habitats in Jersey City

Site 077 is located in a fully developed urban setting of Jersey City between the eastern slope of the Palisades Ridge and the Hudson River. Ecological habitats within Jersey City include the estuary, salt marsh, terrestrial ecosystem and freshwater habitat. Figure 6 - Streams and Lakes of Hudson County, New Jersey shows the location of streams and lakes in Hudson County area. Figure 7 - Freshwater Wetlands in Hudson County, New Jersey shows the locations of freshwater wetlands in the Hudson County area.

2.5.2.1 Estuary

Upper New York Bay/Hudson River, which is part of the Hudson Estuary, is located approximately two and one-half (2.5) miles to the east of the site. The site and adjoining properties are not directly or indirectly connected with the estuary system.

2.5.2.2 Salt Marsh

Site 077 is located approximately one and one-half (1.5) miles from Liberty State Park and two and one-half (2.5) miles from Caven Point Natural Area, which are part of the Upper New York Bay/Hudson River salt marsh. The site and adjoining properties are not directly or indirectly connected with the nearby salt marshes.

2.5.2.3 Fresh Water Habitats

A number of ponds located in the vicinity of Liberty State Park are fresh water habitats located approximately one and one-half (1.5) miles south of the site. A National Wetlands Inventory Map is provided in Appendix B. The site and adjoining properties are not directly or indirectly connected with the nearby wetlands.

2.5.3 Protected and Natural Areas

Liberty State Park, located approximately one and one-half (1.5) miles south of the site, consists of 1,114 acres of shrubland, fields, and coast along the Hudson River. The park is located along the Hudson River in Upper New York Bay northwest of Ellis Island-Statute of Liberty National Monument. The park is heavily visited; however, the natural areas are not heavily used and remain relatively undisturbed.

Caven Point Natural Area located south of Liberty State Park, and approximately two and one-half (2.5) miles south of the site, consists of a small salt marsh and an upland beach area with a tidal mudflat extending the full length of the beach. Vegetation along the upland beach/tidal mud flat consists primarily of Pannic grass (*Panicium* sp.), Beach grass (*Ammophila* sp.) and Common Reed (*Phragmites* sp.).

2.5.4 FEMA Map

The Federal Emergency Management Agency (FEMA) National Flood Insurance Rate map (Appendix B) shows Site 077 and surrounding areas as being in the 100-year flood boundary with a flood hazard factor of five (5) and a base flood elevation of ten (10) feet (Zone A5) on community panel 340223 0003B. Figure 5 - The Floodprone Areas of Hudson County (derived from NJDEP Bureau of Geographic Information & Analysis) show site 077 classified as not located in a floodprone area.

2.5.5 National Wetland Inventory Map

According to the U.S. Department of the Interior, Fish and Wildlife Service's National Wetland Inventory Mapping there are no wetlands within a two and one-half (2.5) mile radius of site 077. A copy of the NWI Map has been included in Appendix B.

2.5.6 Current Ecological Conditions

On May 28, 1997, LRKA personnel performed a reconnaissance of Site 077. The purpose of this site visit was to determine if any " Designated Natural Resources" as defined at N.J.A.C. 7:1E-1.8 exist on or adjacent to the subject property. "Designated Natural Resources" include any natural resource of the State of New Jersey that is mapped, delineated or listed and specifically managed, maintained or protected pursuant to Federal, State or Local statute, order or regulation.

The site is entirely covered by a one (1) story brick warehouse. There are no areas on the site that meet the requirements for a "Designated Natural Resource" as defined at N.J.A.C. 7:1E-1.8.

The adjacent properties include GKY industries, multiple row houses and Danny's Towing & Used Cars. The adjacent properties were inaccessible at the time of the site reconnaissance but were viewed from the adjacent streets. No areas that qualify as a "Designated Natural Resource" were observed on the adjacent properties.

2.6 Current and Former Land Uses

Currently, the site is occupied by a one (1) story brick and block warehouse building utilized by the MVDC as a warehouse facility. The adjoining property to the north is the Eighth Street right of way (adjacent to Block 417, Lots 28 & 29) owned by City of Jersey City. The adjoining property to the south is residential and includes Block 417, Lot U owned by William & Marie Ranieri, Block 417, Lot T owned by Josephine Loricchio, Block 417, Lot S owned by Rolf Burkand, Block 417, Lot R owned by Margaret Pandolflo, and Block 417, Lot 13 & 14 owned by Angelina & Gelina Demio and William Blauche. The adjoining property to the west is an auto repair shop and used car lot owned by Daniel & Linda Johnson (Block 417, Lot 27).

2.6.1 Present and Proposed Future Zoning

The Zoning Map for the City of Jersey City, New Jersey (City of Jersey City, NJ, 1996) shows Site 077 and areas to the east and south zoned as R-2 Low Density Residential. The Jersey Avenue Redevelopment Area and the Ninth Street II Redevelopment Area are to the north. The New Jersey Turnpike Extension is to the west of Site 077 and is zoned as I-1 Automotive, Construction, Office. The future land use, with respect to current zoning in the study area, would be expected to remain the same for the immediate future.

2.7 Historical Aerial Photographs and Maps

Aerial photographs from the NJDEP - Tidelands Management Program were reviewed for the years of 1961-62, 1969-70, 1987 and 1997 and Sanborn Fire Insurance Maps were reviewed for the years 1885, 1906, and 1938. The aerial photographs and maps were inspected for general layout and physical changes, visible indications of filling, wasting and industrial operations, and changes to local land use over time. Copies of aerial photographs and a portion of the 1938 Sanborn Map are presented in Appendix C. The earlier Sanborn Maps show the site to be vacant and are not included.

The NJDEP GIS Resource Database for New Jersey dated 1996 from the Bureau of Geographic Information and Analysis depicting land use, land cover, municipal boundaries and reported environmental database records in digital format was also reviewed. Kimball reviewed historical mapping from the City of Jersey City Planning Office, and historical topographic maps for the years 1967 and 1981 in search of historical changes to surface features. The primary topographic mapping product used in this report is the United States Geological Survey (USGS) Map, Jersey City, NJ - NY 7.5 minute topographic quadrangle.

Table 1 provides a summary of chronological sequencing of observations from aerial photographs and historical mapping products for the site.

Table 1 . Evaluation of Historical and Aerial Photographs and Maps

Date	Map/ Photo	Source/ Location	On-Site Features	Off-Site Features
1885	Map	Sanborn Fire Insurance Map - New Jersey State Library	- Vacant.	(all directions): Vacant.
1906	Map	Sanborn Fire Insurance Map - New Jersey State Library	- Vacant.	(all directions): Vacant.
1938	Map	Sanborn Fire Insurance Map - New Jersey State Library	- A shed and stable occupy the west half of the site.	(North): Eighth Street. (South): Houses with yards. (East): Vacant land and a scrap iron yard. (West): Indistinguishable structure adjacent to the site and a coal yard west of that structure.
1961 -62	Photo	NJDEP - Tidelands	- Indistinguishable, possibly a commercial structure.	(North): Eighth Street, structures on the north side of Eighth Street. (South): Residential row houses possibly mixed with small shops and businesses. (East): Indistinguishable, possibly a small structure with a parking lot. (West): Commercial structures.
1969 -70	Photo	NJDEP - Tidelands	- Warehouse or other commercial structure covers entire lot. - Surrounding structures to the west appear to be larger.	(North): Eighth Street, vacant lot with small structures on the north side of Eighth Street. (South): Residential row houses possibly mixed with small shops/businesses . (East): Parking lot area possibly paved with small structure in east corner along south side of Eighth Street. (West): Large commercial structures.

Date	Map/ Photo	Source/ Location	On-Site Features	Off-Site Features
1981	Map	U. S. G. S 7.5 Min. Quadrangle, Jersey City, NJ (1967-photo revision)	- Urban area. - Streets, street names highways and railways.	(North): Eighth Street, structures on the north side of Eighth Street. (South): Seventh Street. (East): Urban area, Brunswick Street further east. (West): Urban area, Division Street further west.
1987	Photo	NJDEP - Tidelands	- Warehouse type structure covers entire lot. - Appears to be a disturbed area on adjacent property.	(North): Eighth Street, baseball field and park along north side of Eighth Street. (South): Residential row houses. (East): Appears to be a disturbed area, possible excavations or construction. (West): Large commercial building(s).
1997	Photo (3-13-97)	L. Robert Kimball & Assoc., Inc.	- Warehouse type structure (one story) covers entire lot. - Larger (possibly two story) commercial type structures cover the entire adjacent lots to the east and west.	(North): Eighth Street, baseball field and park along north side of Eighth Street. (South): Residential row houses. (East): Large two story commercial building with parking lot. (West): Commercial building with parking lot containing many cars.

2.8 Historical Site Filling Activities and Land Disturbances

LRKA personnel visited the City of Jersey City, Engineering Department to review records regarding historical site filling activities and land disturbances for the site. Personnel from the City of Jersey City Engineering Department stated that no files regarding demolition and site filling activities potentially conducted at Site 077 were on record.

However, information obtained from historical aerial photographs and mapping products indicate that the site has been occupied by a warehouse structure since 1961. Therefore, any filling activities performed on the site are suspected to have occurred prior to 1961.

2.9 Previous Remedial Investigations and Interim Remedial Measures

In an undated report prepared by Aguilar Associates & Consultants, Inc. (AAC) for work completed in July 1987 for Modern Village Development Corporation (MVDC) at 383 8th Street (Site 077), AAC reported that in March 1987, MVDC removed and replaced concrete flooring in the Site 077 structure. During excavation of the concrete flooring, yellow staining was visible on the bottom of the concrete slabs. With the finding of yellow staining and crystals, the concrete slabs were removed from the Site 077 building and placed on the adjacent vacant lot immediately west of the Site 077 structure (NJDEP Site 076 - 379 - 381 8th Street) to await waste classification and disposal. New concrete was poured into the structure.

The new concrete floor was constructed and an inspection of the warehouse facility by the Jersey City Health Division (JCHD) followed. At the time of the inspection, the concrete block walls within the warehouse facility were stained with various colored materials and showed evidence of crystal growth. During the inspection, Mr. Earl Z. Tex Aldredge of the JCHD expressed concerns about the possibility of chromium in the soil beneath the facility and requested that employees don dust masks while working within the building. Mr. Aldredge requested that the crystalline material be removed and a sealing material sprayed on the walls to prevent further "wicking" of the contaminants from the soil underneath the floor. Mr. Aldredge also requested that a sampling program be developed to determine the presence of chromium particulates within the facility.

On April 15, 1987, Aguilar Associates & Consultants, Inc. (AA&C), under contract with Modern Village Development Corporation (MVDC), prepared and implemented a sampling plan for air quality monitoring within the newly renovated facility. On April 24, 1987, AA&C submitted a proposed air sampling plan. Mr. Aldredge approved the air sampling plan on July 7, 1987 and AA&C implemented the plan on July 10, 1987. A report of air sampling activities with analytical results prepared by AA&C is located in Appendix D. The results of air sampling indicated no detectable concentrations of chromium in the air.

On June 15, 1987, AA&C submitted a foundation sealing plan to the City of Jersey City. A sealing material was applied to the interior walls of the Site 077 building on July 24, 1987.

In March/April 1988, the New Jersey Department of Environmental Protection (NJDEP) conducted a Presampling Assessment for Site 077 (383 Eighth Street) and Site 076 (379-381 Eighth Street). The Presampling Assessment documents report the following:

- Site 077 consisted of a warehouse building located at 383 8th Street. Chromate waste was reportedly used as fill beneath the building.
- Concrete excavated from the floor of the Site 077 structure was stored on 379-381 Eighth Street (NJDEP Site 076) in five (5) fifty-five (55) gallon drums. The waste was classified by NJDEP-BHWC as Id #27 and later disposed of off-site.
- Soil was partially excavated and six (6) inches of concrete was poured as new flooring inside the Site 077 structure.
- At the time of the presampling assessment, samples were not taken at Site 077 due to inaccessibility. Samples also were not collected at the adjacent site (NJDEP Site 076) because remediation was in progress.

- As of April 18, 1988 a building was being constructed over the vacant lot (379 - 381 8th Street), formerly listed as Site 076, immediately west of the Site 077 structure.

March 8, 1990 - Accutech Environmental Services, Inc. (AESI), under contract with Modern Village Development Corporation submitted a report of Subsurface Investigation for Modern Development. Although the report is written listing the site as 383 8th Street, which at that time was the office for MVDC, review of the report drawings indicate that sampling was conducted on the former Site 076 which include Former City Lots 29 and 30 (Current Lot 33) at 379 - 381 8th Street. The subject report provided the following:

- The investigation conducted to a maximum of 5 feet depth found soils on the former Site 076 property consisted of naturally stratified drift and urban fill. The soil was described as a black, silty, sand fill with pockets of ash and slag. An abundance of pebbles, gravel, and bricks intermixed with pieces of concrete was also noted.
- A total of nine (9) borings were drilled with three (3) soil samples (A, B and C) taken from each boring. Samples were collected at the following depths: "A" samples were collected between 0" and 6", "B" samples were collected between 24" and 30" and "C" samples were collected between 54" and 60". Samples were analyzed for Total Chromium under EPA method 7190 at a state licensed laboratory. Obstructions prevented "C" samples from being taken at B2, B7, B8 and B9.
- Total chromium concentrations in surface soils (0 to 6 inches) ranged from 22.1 mg/kg to 154 mg/kg.
- Total chromium concentrations in shallow subsurface soils (24 to 30 inches) ranged from 9.5 mg/kg to 32.8 mg/kg.
- Total chromium concentrations in deeper subsurface soils (54 to 60 inches) ranged from 2.9 mg/kg to 32.2 mg/kg.
- Surface soil within three (3) feet of the Site 077 exterior west wall previously was excavated and disposed off-site. The depth of excavation is not recorded. Assuming full length of the building and three (3) feet wide excavation, less than two (2) feet depth would result in the 15 cubic yards of material removed from the site in 1988.
- Thirty (30) mil polyethylene was placed over the exterior face of the cinder block west wall of the Site 077 structure and concrete poured into the excavation.

AESI suggested that the variation in chromium concentrations in surface soils in the former Site 076 resulted from cross-contamination from soils excavated along the west wall of the Site 077 structure in 1988. The sample results indicate that chromium concentrations decrease with depth and the higher concentrations tend to be concentrated on the southwest side of the property. Maps and sampling results of this investigation are presented in the 1990 AESI report in Appendix D.

AESI also prepared a groundwater assessment with the March 1990 report indicating that groundwater was encountered three (3) to four (4) feet below the surface of the building foundations. However, no survey data was available to get actual elevations of the groundwater surface resulting in limited usefulness of the data. Groundwater quality is also unknown because groundwater was not sampled as part of the groundwater assessment. A groundwater contour map and 3-D perspective are found in the 1990 AESI report in Appendix D.

2.10 Enforcement Actions

A Directive and Notice to Insurers (1995 Directive Number 20) was issued by the NJDEP on August 3, 1995 to representatives of Allied Signal, Inc., Occidental Chemical Corporation, Maxus Energy Corporation, and PPG Industries, Inc. This Directive was to arrange for the cleanup and removal of certain discharged hazardous substances at the respective sites where chromate chemical wastes were identified. None of the four (4) previously stated responsible parties could legally be individually linked to the chromate waste identified at the site; therefore, Site 077 was classified as an orphan site. Each of these companies is considered a potentially responsible party and therefore may potentially be directed to enter into an Administrative Consent Order (ACO) to participate in future remediation of the site.

3.0 SITE RECONNAISSANCE

Site reconnaissance was conducted by LRKA and the NDJEP Site Manager and Technical Coordinator on March 12, 1997 to inspect the interior of the Site 077 structure and adjacent properties. A site reconnaissance was conducted by LRKA personnel on May 29, 1997 to identify visible areas of potential environmental concerns exterior to the site structure.

The site is completely covered by a one (1) story brick and block building and is presently being used as a warehouse facility by the Modern Village Development Corporation (MVDC). The building is accessible from Eighth Street through a loading dock entrance.

The site is bounded by the following:

- to the north by Eighth Street and a city ball field,
- to the east by a newly constructed (1990) warehouse occupied by GKY Industries (Lot 33) and undeveloped parking area (Lot 31),
- to the southeast by residential properties behind the adjoining warehouse (Lots N,P,R,S,T,U),
- to the south by a one-story commercial building occupied by Art Moving Company (Lot 13),
- the west by a one-story wood and brick commercial building (Lot 27) known as the Johnson Building and a block building occupied by Danny's Towing and Used Cars (Lot 26).

4.0 AREAS OF CONCERN

4.1 On-site Areas of Concern

Prior site inspections and investigations conducted by the NJDEP and others indicate that chromate wastes are likely present beneath concrete flooring of a one-story cinder block and brick structure at 383 8th Street known as Site 077. The reviewed documentation indicate that

hexavalent chromium was and is evident as yellow staining and crystalline growths on concrete flooring and brick walls of the structure.

Investigations conducted in 1990 by consultants for the current owners report that chromium was detected in surface soils between 22.1 mg/kg and 154 mg/kg on adjoining properties along the west exterior walls of the Site 077 structure, formerly identified as Site 076 at 379 to 381 8th Street. The prior reports also indicate that approximately 15 cubic yards of surface soil were excavated in 1988 within three (3) feet of the Site 077 west exterior wall and removed off-site. The adjoining property (former Site 076) was removed from consideration as a chromate waste site following the partial removal of contaminated soil and placement of a polyethylene barrier between new concrete flooring and underlying soil.

4.2 Potential Off-Site Sources

No potential off-site sources are identified for properties adjoining Site 077. The NJDEP Known Contaminated Site List (revised February 1996) was reviewed to identify potential off-site sources of contamination in proximity to Site 077. Results of this search, conducted within one-half (0.5) mile of the site, identified nine (9) sites. Table 2 - Known Contaminated Sites Within One-Half Mile Radius, presents a listing of the identified sites.

Table 2
Known Contaminated Sites Within One-Half Mile Radius

FACILITY	ADDRESS	EPA IDENTIFICATION	LISTING REPORT	RELATIVE LOCATION
590 ½ Jersey Avenue	Jersey Avenue	NJL000060194	KCS	0.13 mi. east
Jersey City Fire Department	355 Newark Avenue	NJL600225783	KCS	0.20 mi. west
James Ferris High School	35 Colgate Street	NJD120547666	KCS	0.33 mi. south
Exxon Service Station Jersey City	726 Jersey Avenue	NJL600182075	KCS	0.42 mi. north
Getty Service Station Jersey City	351 Henderson & Bay Avenues	NJX000289637	KCS	0.42 mi. east
Newport Development	Luis Munoz Marin Blvd & 6th Street	NJD981133135	KCS	0.43 mi. east
Schiavone Bonomo Corporation	1 Jersey Avenue	NJD006972921	KCS	0.44 mi. north
National Cold Storage	215 Coles Street	NJL600182810	KCS	0.49 mi. north
Holland Petroleum Corporation	235 12th Street	NJL600025993	KCS	0.50 mi. north

KCS - NJDEP Site Remediation Program Known Contaminated Sites List, February 1996

5.0 NATURE OF THE PROBLEM

Chromium chemical production wastes containing elevated levels of chromium and other metals are reported to have been used as fill beneath a one-story warehouse building situated at 383 8th Street. Prior investigations indicate that the chromium has migrated into and through the foundation walls, contaminating adjacent soils and building structures. Hexavalent chromium crystalline growth are visible on foundation brick work.

Figure 8 - Nature of the Problem, presents a conceptual model for NJDEP Site 077. The model illustrates contamination sources, primary and secondary release mechanisms, impacted media, exposure pathways, and potential receptors determined from background information and site reconnaissance.

As indicated on Figure 8, the primary contamination source is chromate chemical production waste material used as fill at the site. Chromate waste fill often resembles the native soil, but has a reddish color due to high concentrations of iron oxide. The chromium compounds in the fill are dissolved slowly in water and eventually release trivalent and hexavalent chromium compounds that partition to the native soil particles. This process often makes it difficult to distinguish between fill material and the native soil. In addition to the transport of chromium by groundwater or surface water, transport can also occur through the atmosphere as a result of aerosol formation or airborne particulates. Crystals forming on the surface of chromium waste sites due to evaporation of chromium contaminated water are friable and become airborne when disturbed (Hudson County, Final Report, 9/5/89). The presence of the chromium waste material and its likelihood of transport to other media such as groundwater, surface water, sediments, and air, poses the potential for adverse effects on both humans and terrestrial and aquatic biota (Hudson County, Final Report, 9/5/89).

The most significant human health risk associated with the chromium fill at NJDEP Site 077 is the inhalation of dust containing airborne particles of hexavalent chromium salts. When inhaled, hexavalent chromium is a suspected human carcinogen. Additional health concerns associated with exposure to chromium include allergic and irritative effects to both the respiratory system through inhalation and to the skin through dermal contact. Inhalation or ingestion of chromium may also lead to adverse effects to the kidneys (Hudson County, Final Report, 9/5/89). Due to the health risk described above, possible routes of exposure to chromium need to be examined. The possible routes of exposure for site workers, site visitors, and terrestrial and aquatic biota are illustrated in Figure 8 (Adapted from Smith, 1996).

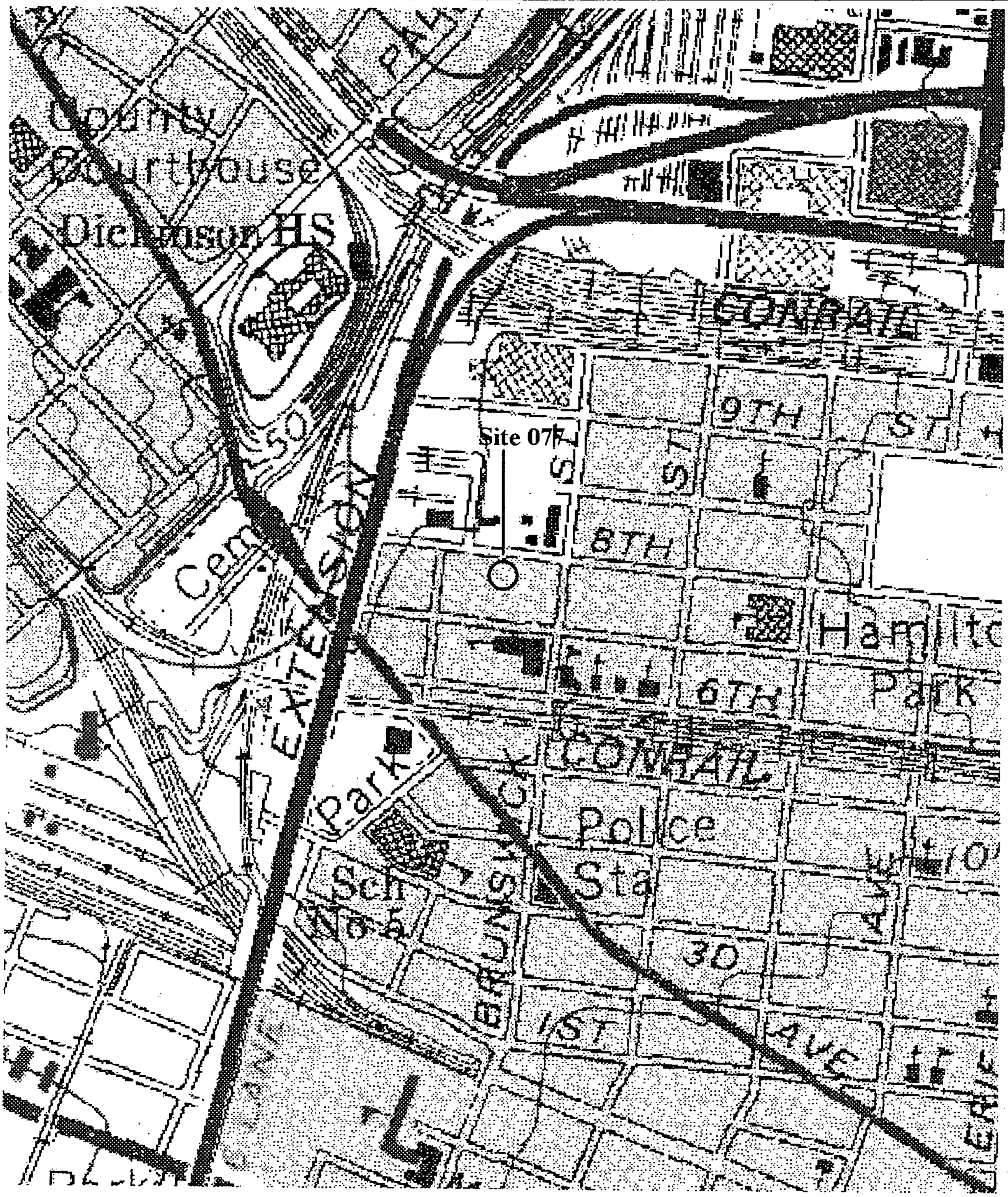
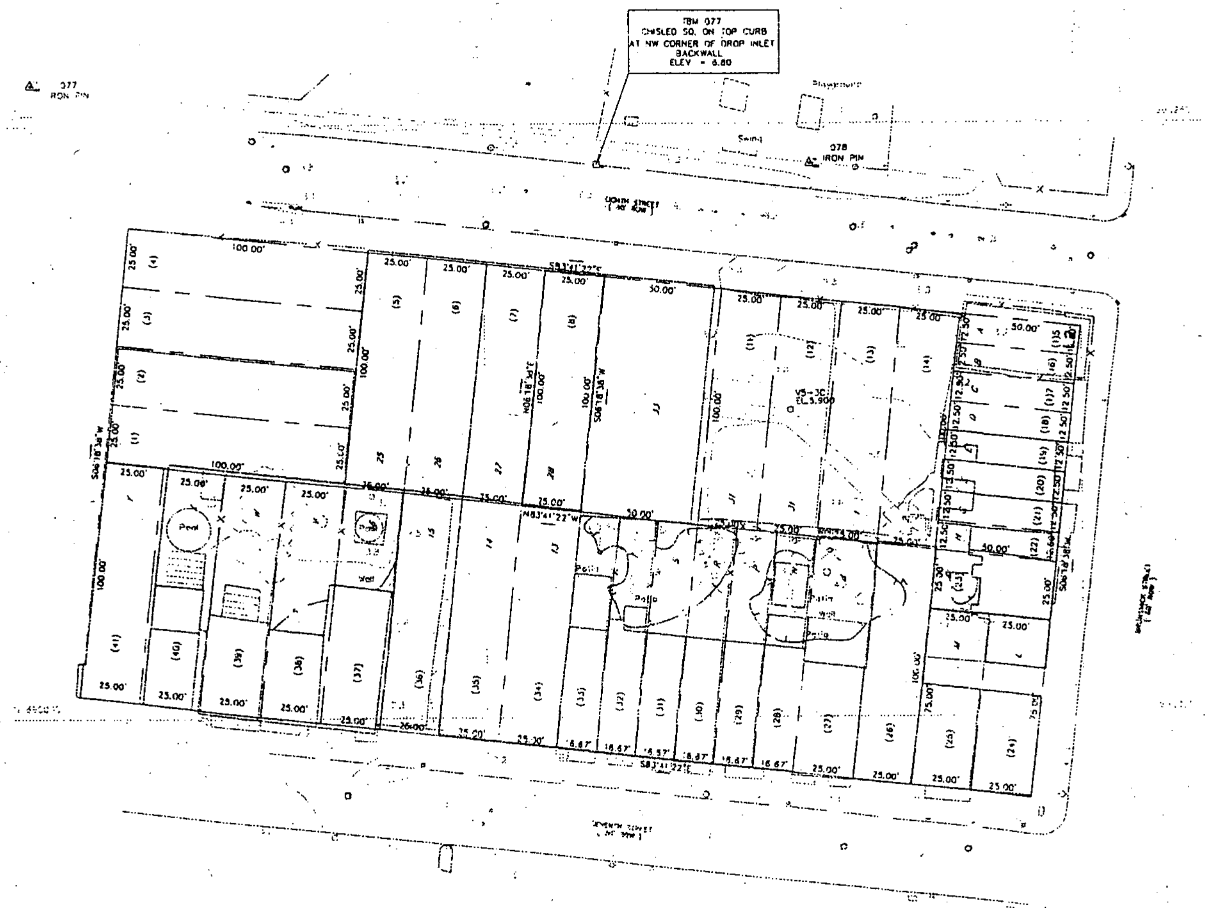


FIGURE 1
SITE LOCATION MAP
HUDSON COUNTY CHROMATE WASTE SITES - SITE 077
JERSEY CITY, HUDSON COUNTY, NEW JERSEY

Source: U.S.G.S. 7.5 min Quadrangle, Jersey City, NJ, Photorevised 1981

Scale: 1" = 2,000'



TAX BLOCK 417

LOT		OWNER	LIBER
28	(8)	MODERN VILLAGE DEVELOPMENT CORP.	BOOK 4083 PAGE 294
33		VEDIBALIAN T/A M&S	BOOK 3470 PAGE 1014
13	(34)	ANGELINA & CELINA DEMIO	BOOK 3360 PAGE 382
14	(35)	ANGELINA & CELINA DEMIO	BOOK 3360 PAGE 382
11	(33)	WILLIAM & MARIE RANIERI	BOOK PAGE
7	(32)	JOESPHINE LORICCHIO	BOOK 3309 PAGE 700
5	(31)	ROLF BURKARD	BOOK 3433 PAGE 89
9	(30)	MARGARET PANDOLFLO	BOOK 2989 PAGE 586
27	(7)	DANIEL & LINDA JOHNSON	BOOK 3551 PAGE 344

GRAPHIC SCALE

SURVEYED BY: ELH	DRAWN BY: ELH	CHECKED BY:
APPROVED BY:		REVISIONS NO. DATE

CARY L. HOOVER
LAND SURVEYOR NO. 40020

BOUNDERY & TOPO SURVEY

RI-16, SITE 77
JERSEY CITY, HUDSON COUNTY, NEW JERSEY

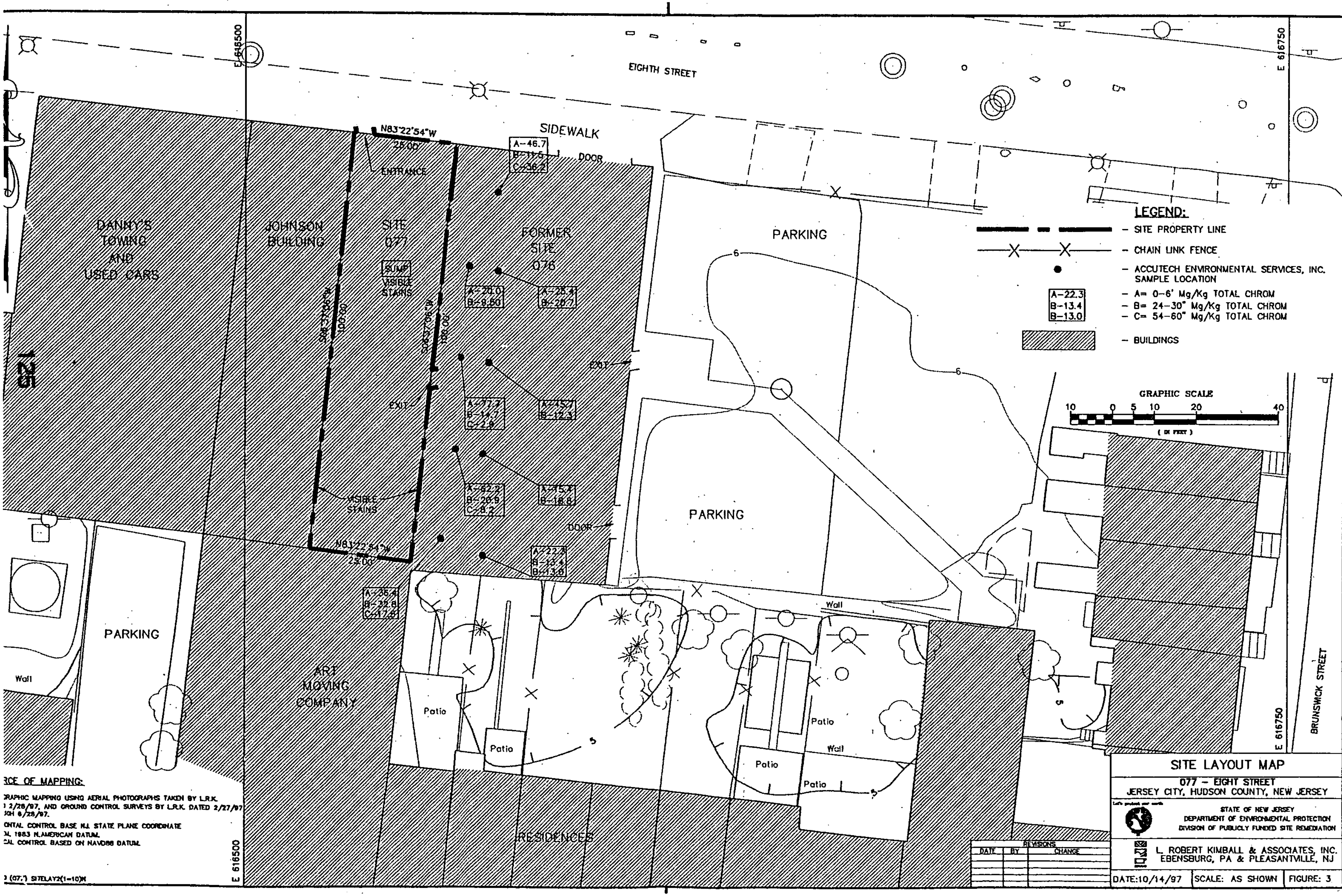
STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF PUBLICLY FUNDED SITE REMEDIATION

L. ROBERT KIMBALL & ASSOCIATES, INC.
EBENSBURG, PA & PLEASANTVILLE, NJ

DATE: 9/2/97 | SCALE: AS SHOWN | SHEET 1 OF 1

L. ROBERT KIMBALL AND ASSOCIATES, ARCHITECTS AND ENGINEERS, INC., EBENSBURG, PENNSYLVANIA

124



EIGHTH STREET
SIDEWALK
N83°22'54"W
25.00'
ENTRANCE
DOOR
A-46.7
B-11.6
C-36.2
DANNY'S TOWING AND USED CARS
JOHNSON BUILDING
SITE 077
SUMP
VISIBLE STAINS
FORMER SITE 076
S06°37'06"W
100.00'
A-20.0
B-9.60
A-25.4
B-20.7
EXIT
A-77.7
B-14.7
C-2.9
A-45.7
B-12.3
A-62.2
B-20.9
C-8.2
A-75.4
B-16.8
VISIBLE STAINS
DOOR
A-22.3
B-13.4
B-13.0
A-36.4
B-32.8
C-17.8
PARKING
PARKING
PARKING
ART MOVING COMPANY
Wall
Patio
Patio
Patio
Patio
Patio
Wall
RESIDENCES
BRUNSWICK STREET
E 616500
E 616750
LEGEND:
– SITE PROPERTY LINE
– CHAIN LINK FENCE
– ACCUTECH ENVIRONMENTAL SERVICES, INC. SAMPLE LOCATION
– A= 0-6' Mg/Kg TOTAL CHROM
– B= 24-30" Mg/Kg TOTAL CHROM
– C= 54-60" Mg/Kg TOTAL CHROM
– BUILDINGS
GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
RCE OF MAPPING:
RAPHIC MAPPING USING AERIAL PHOTOGRAPHS TAKEN BY L.R.K.
2/26/97, AND GROUND CONTROL SURVEYS BY L.R.K. DATED 2/27/97
GH 6/28/97.
ONTAL CONTROL BASE N.J. STATE PLANE COORDINATE
M, 1983 N.AMERICAN DATUM.
CAL CONTROL BASED ON NAVD88 DATUM.
(07.) SITELAY2(1-10)M
REVISIONS
DATE BY CHANGE
SITE LAYOUT MAP
077 – EIGHT STREET
JERSEY CITY, HUDSON COUNTY, NEW JERSEY
STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF PUBLICLY FUNDED SITE REMEDIATION
L. ROBERT KIMBALL & ASSOCIATES, INC.
EBENSBURG, PA & PLEASANTVILLE, NJ
DATE:10/14/97
SCALE: AS SHOWN
FIGURE: 3

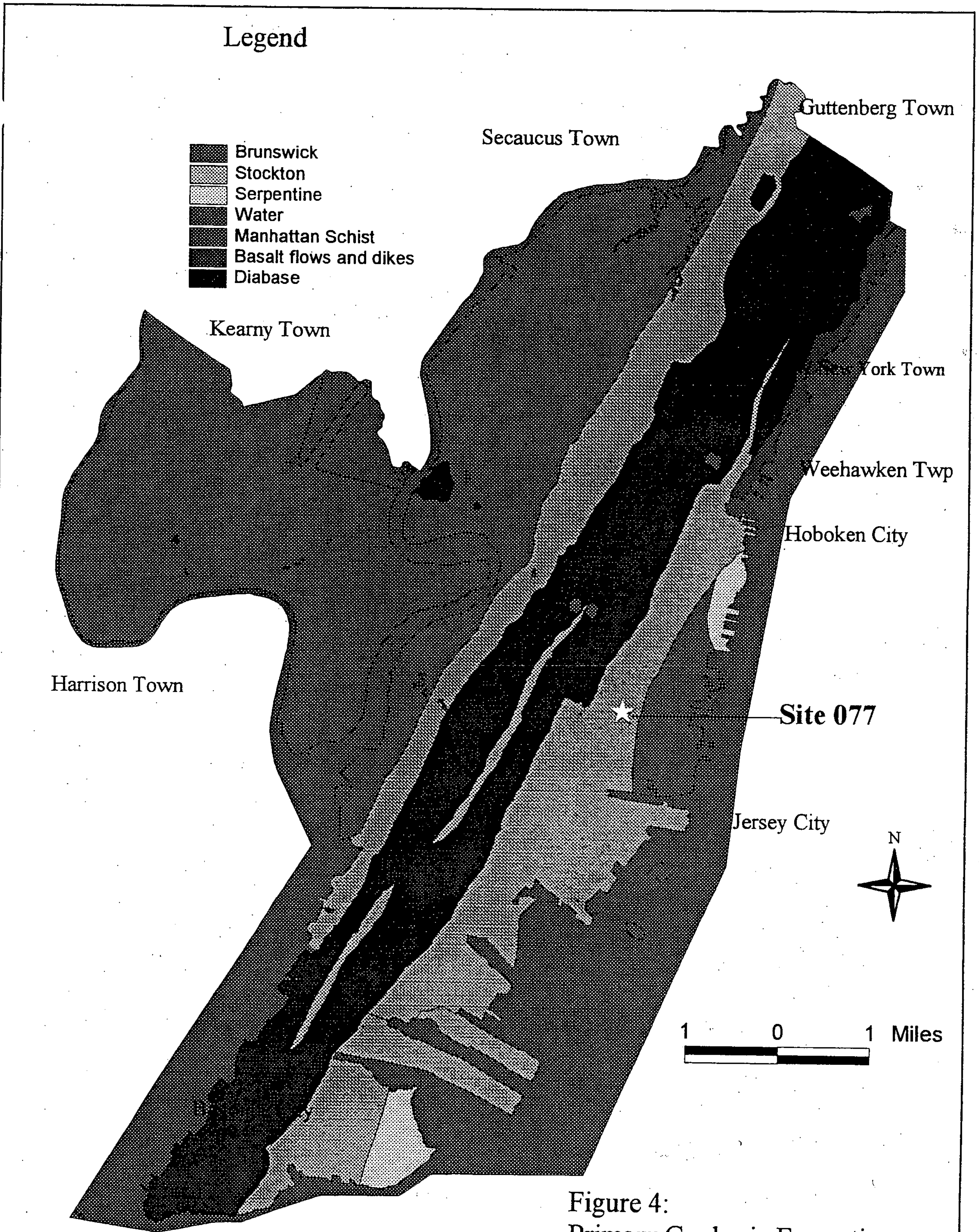


Figure 4:
Primary Geologic Formations
of Hudson County, New Jersey

Source: NJDEP Bureau of Geographic Information & Analysis, March 7, 1996

L. Robert Kimball & Associates, Inc. October 1997

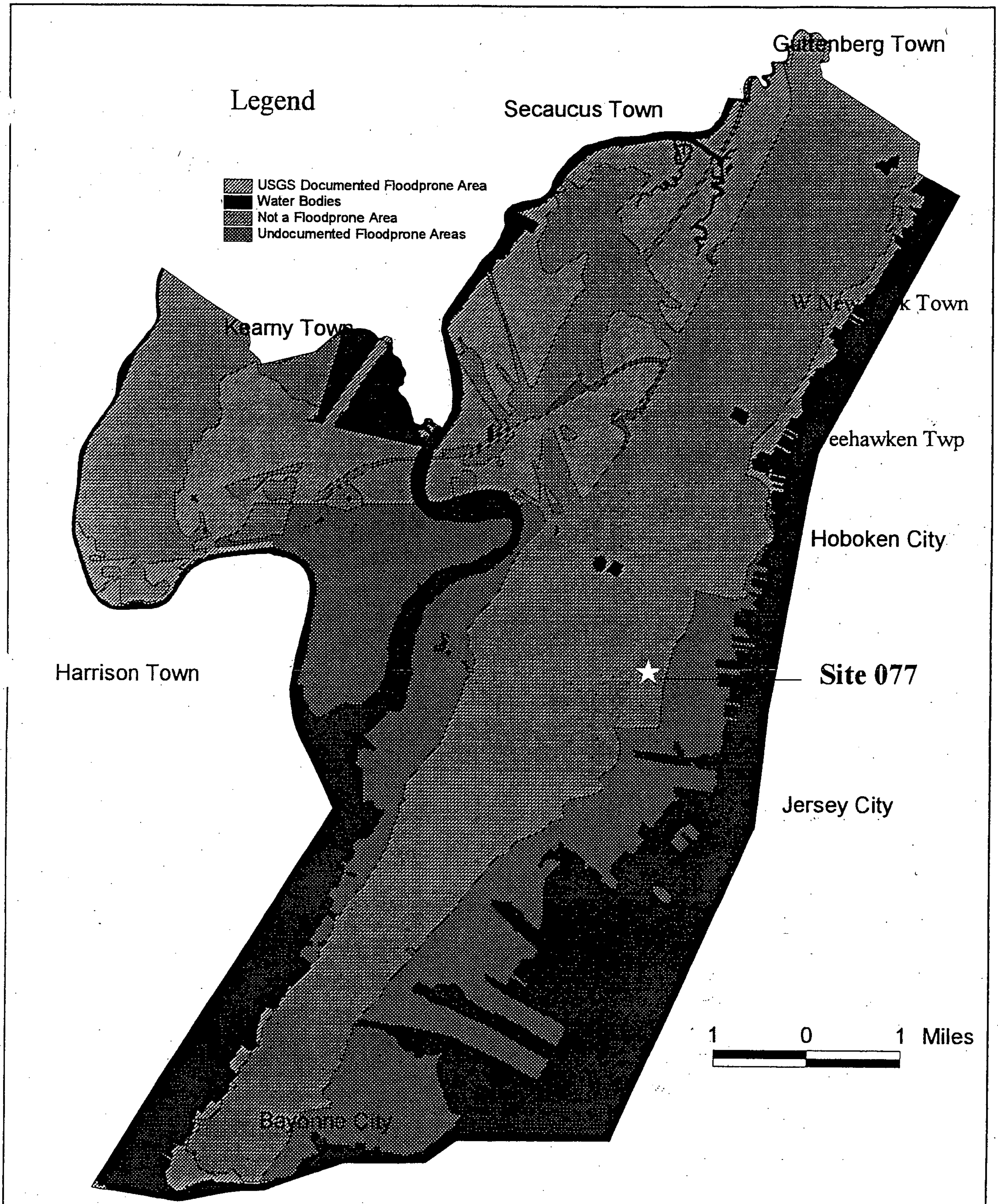


Figure 5:
Floodprone Areas
of Hudson County, New Jersey

Source: NJDEP Bureau of Geographic Information & Analysis, March 7, 1996

L. Robert Kimball & Associates, Inc. October 1997

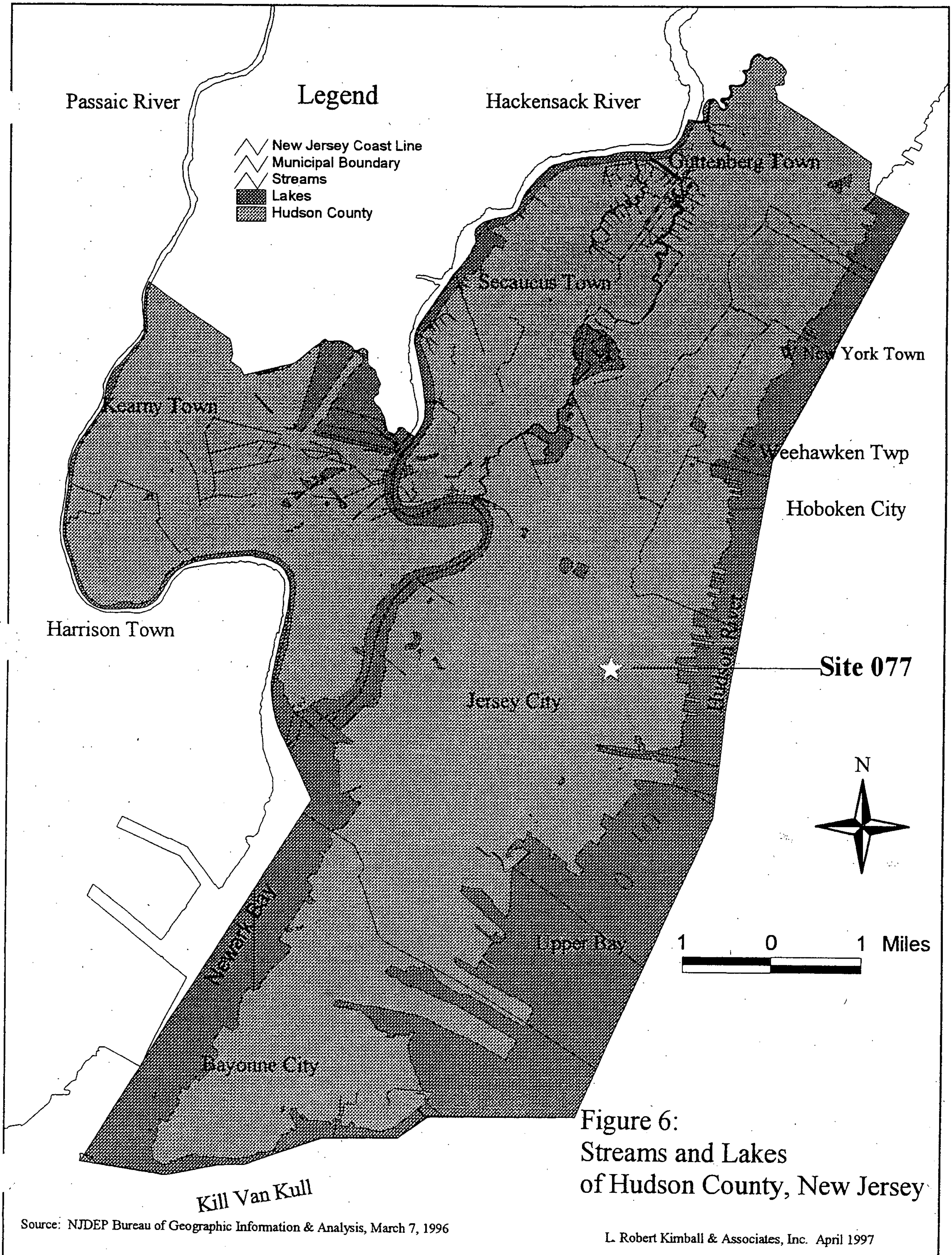


Figure 6:
Streams and Lakes
of Hudson County, New Jersey

Source: NJDEP Bureau of Geographic Information & Analysis, March 7, 1996

L. Robert Kimball & Associates, Inc. April 1997

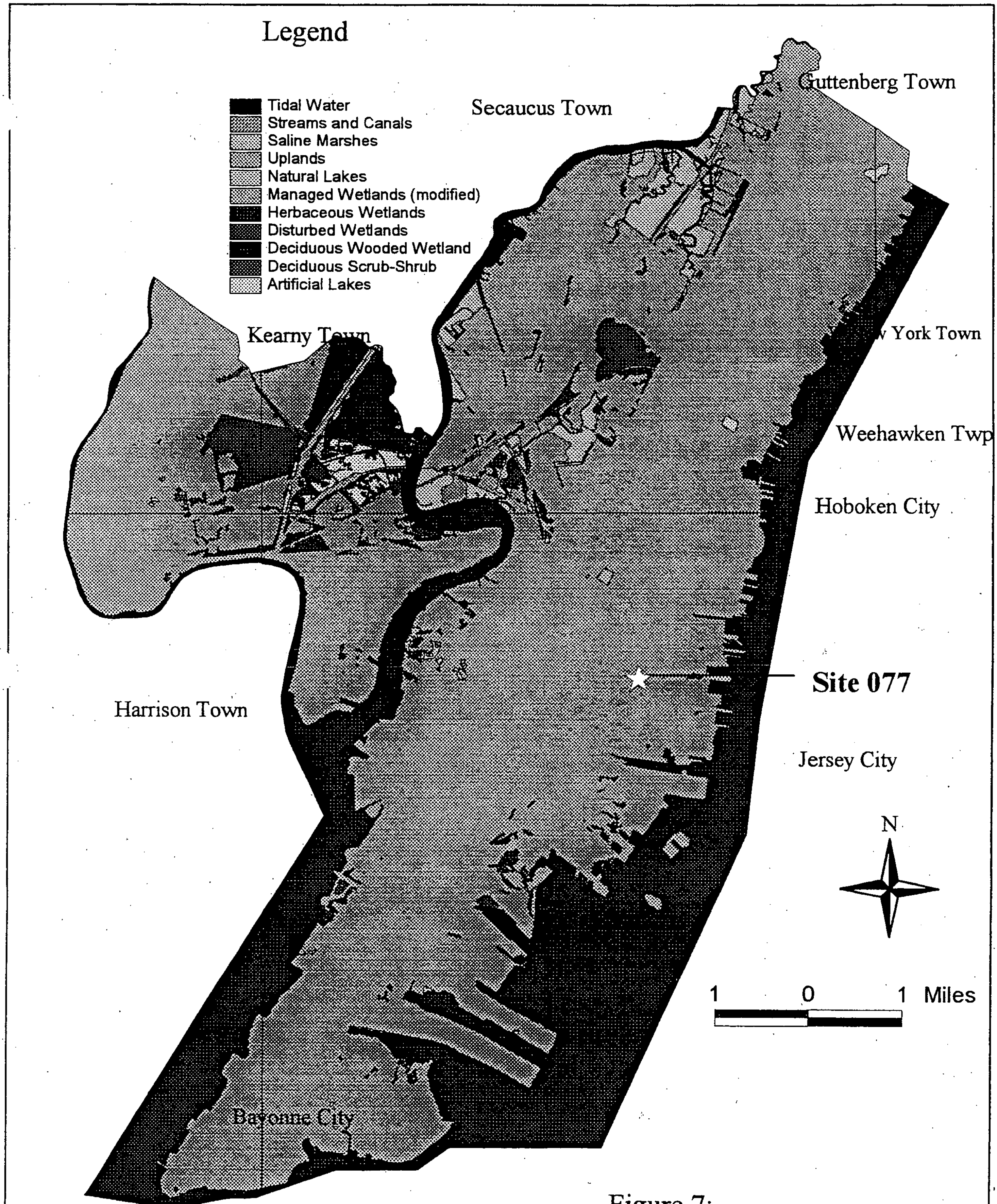


Figure 7:
Freshwater Wetlands
of Hudson County, New Jersey

Source: NJDEP Bureau of Geographic Information & Analysis, March 7, 1996

L. Robert Kimball & Associates, Inc. October 1997

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ATTACHMENT T

Final
Preliminary Site Characterization Report
with
Final Site Characterization Recommendations

for

Site 077 - Eighth Street #2

Hudson County Chromate Orphan Sites - Group 1 Remedial Investigations
Jersey City, Hudson County, New Jersey

Prepared for:

New Jersey Department of Environmental Protection
Bureau of Publicly Funded Site Remediation
Trenton, New Jersey

Prepared by:

L. Robert Kimball & Associates, Inc.
Consulting Architects and Engineers
Ebensburg, PA   Trenton, NJ

May 2001

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Executive Summary

This report presents the results of investigations conducted by L. Robert Kimball and Associates, Inc. (Kimball) for the New Jersey Department of Environmental Protection, Publicly Funded Site Remediation Program in Preliminary Site Characterization (PSC) of the Hudson County Chromate Orphan Site 077 - Eighth Street #2 and recommendations for Final Site Characterization (FSC). The purpose of this PSC was to assess the nature and extent of chromium chemical production wastes (chromate wastes) and its impacts, and to develop recommendations for FSC work needed to complete remedial investigations.

Site investigations were conducted between March 23 and 26, 1998; on October 13, 1999; October 19 and 20, 1999; and on December 13, 1999 during which soil/fill/debris samples were collected from borings through soil and building floor. Chromate waste was encountered beneath the floor inside the building and one boring through the sidewalk (S010). Heavy metal contamination indicative of historic fill and chromate waste was detected in soil samples submitted for laboratory analysis. Hexavalent chromium crystal staining was visible on the underside of the floor slab, the gravel immediately beneath the floor, and the buildings walls within three feet of the floor. Hexavalent chromium concentrations found while boring the concrete floor ranged from non-detect to 5330 mg/kg (BD16). Hexavalent chromium was detected above action levels in borings, BD04, BD11, BD13, BD14, BD15, BD16, BD17, BD18, BD19, BD20.

The concrete floor is underlain by various depths of gravel placed for final leveling of the surface. A layer of mixed fill consisting of coal cinders and ash, sand, gravel and bricks underlies the floor, and, where present, the gravel. Where this mixed fill and debris was found, chromate waste was absent. Also, chromate waste was not found below 3 feet, indicating that the chromate waste was placed after the mixed fill had leveled the majority of the site. The fill and debris did not extend beyond the area of the building and sidewalk. Fill and debris extended to six feet below the surface in the adjoining property before natural sand deposits were encountered. Organic soil and root material indicative of meadow mats were found in S029 and S031 at 12 and 11 feet, respectively.

Soil samples were collected from boring locations under the floor and sidewalk, and locations south, north, and east of the building. Chromate waste and metals associated with chromate waste were detected in soil samples submitted for laboratory analysis. Hexavalent chromium concentrations ranged from non-detect in borings off-site to 188 mg/kg at S033 under the concrete floor. Vanadium and Nickel were also found at this location and depth at concentrations of 753 mg/kg and 434 mg/kg, respectively. Hexavalent chromium was detected above action levels in four borings, S004, S010, S032, and S033. Analysis of samples removed from under the sidewalk ranged from below reliable detection limits to 64.2 ppm for hexavalent chrome. Analysis of samples taken from the three off-site borings yielded no contaminants at elevated concentrations. One of the borings through the sidewalk, S010, was the only location outside of the building where chrome was found in levels above NJDEP Criteria.

The building investigation included collecting of wipe samples from the walls, and drill cuttings and cores from the walls and floor. The wipe samples were collected from six locations, and hexavalent chromium concentrations were below the method detection limit. The drill cuttings and chips from building walls and cores from the floor and sidewalk were extracted from 24 locations. A total of 87 samples were acquired and all submitted for analysis. Results indicate hexavalent chromium ranges as high as 5,330 mg/kg (077BD16-0.4-0.7) in the mortar of the wall to below detection limits at other wall locations. Some borings through the concrete floor revealed visible hexavalent chromium crystals and staining on gravel and the underside of the concrete slab. The samples taken from beneath the floor revealed hexavalent chromium amounts under the slab exceed NJDEP soil action levels.

Four monitor wells were installed in soil borings, three off-site, and one on-site. Groundwater samples were collected from the installed wells on December 13, 1999. Fifteen TAL inorganic analytes were detected in the groundwater samples collected from the on-site monitoring well, and off-site monitoring wells. Lead contamination in three monitoring wells was found to exceed the groundwater quality standard of 10ug/l. Of unfiltered samples, the highest Lead was 42.4 ug/l, while filtered samples yielded results of non-detection. Aluminum was detected in all groundwater samples, including two wells above the GQS of 200 ug/l with concentrations of 663 and 777 ug/l. The rest of the samples ranged from 56 ug/l Al to 158 ug/l Al. Iron and Manganese were both detected above GQS in all groundwater samples. Iron amounts ranged from 6580 ug/l to 25200 ug/l, and Manganese uniformly lower at 218 ug/l to 2420 ug/l. Sodium was found to be above GQS in all wells except MW01, which contained sodium at about half the GQS.

Inorganic contaminants associated with chromate waste: Antimony, Beryllium, Cadmium, and Nickel were not detected. Vanadium was detected in two monitoring wells at estimated concentrations of 10.4 ug/l and 2.3 ug/l. Total chromium was detected in MW01 at a concentration of 54.1 ug/l, which is below the GQS of 100 ug/l. An estimated value for chromium from MW02 was listed by the laboratory as 1.9 ug/l, far below the GQS. Total chromium was not detected in the samples from MW03 and MW04. Hexavalent chromium was not detected in either filtered or unfiltered samples from all four monitoring wells.

Acetone was detected at a concentration of 70ug/l in MW04, which is below the Groundwater Quality of 700 ug/l for acetone. No other volatile organic compounds were detected in groundwater samples. No semi-volatile organic compounds were found above reliable detection limits No pesticides or PCB were detected.

Preliminary ecological needs analyses were conducted to determine if wetland indicators and/or sensitive fauna and/or flora were present in areas of investigation. Kimball environmental scientists visited the site on May 28, 1997 to document the presence and extent of sensitive areas. Investigation results indicate that no environmentally sensitive areas exist near the Site 077 study area and no confirmed migration pathway exists between site chromate waste and off-site environmentally sensitive areas.

Based on results of investigations conducted to date, the following recommendations were presented for Final Site Characterization of the site:

- In order to delineate the extent of chromate waste observed beneath the sidewalk in front of the building, we recommend additional soil/fill/debris investigation be performed with two additional soil borings advanced within the Eighth Street right-of-way (immediately north of the sidewalk) and two additional soil borings advanced within the sidewalk immediately east and west of the site to delineate the extent of chromate waste impacts.

- No further investigation in characterizing site wastes in regard to particle size distribution is necessary unless chromate waste is encountered within the additional soil borings.

- Since indications of chromium ion migration was observed in subsurface soil and wall structures at the property line, we recommend conducting interior inspections of adjoining buildings to determine if chromium ions have migrated through the wall and foundations onto adjoining properties.

- We recommend that a second round of groundwater samples be collected and analyzed from the four monitoring wells constructed for this investigation to confirm the findings of this investigation and to meet project objectives in determining impacts to groundwater from contaminants identified on-site.

Preliminary Site Characterization Report
with
Final Site Characterization Recommendations
Site 077 - Eighth Street #2

1.0 INTRODUCTION

1.1 Purpose and Organization of Report

This report is submitted by L. Robert Kimball & Associates, Inc. (Kimball) to document the results of investigations conducted during the Preliminary Site Characterization (PSC) of Hudson County Chromate Orphan Group I Site 077- Eighth Street #2 in Jersey City, Hudson County, New Jersey. The purpose of the PSC investigations is to determine the nature and extent of contamination associated with chromate chemical production waste used as fill on the site.

This report is divided into four sections. Section 1 includes a detailed introduction including the site features and environmental setting, the objective of the Remedial Investigation (RI) and supporting documents used to conduct the investigation. Section 2 discusses the various means and techniques used in conducting this investigation. Section 3 provides a summary and analysis of the analytical data and an evaluation of the nature and extent of identified contamination, and Section 4 is the recommendations for Final Site Characterization (FSC) based upon the PSC findings.

1.2 Objectives of Remedial Investigation

The specific objectives of the investigations conducted to date include:

- Identify and delineate the extent of environmental contamination related to chromate wastes on the site;
- Collect data sufficient to cover the range of potential environmental impacts anticipated for the site and physical and chemical characteristics related to those impacts;
- Determine the physical and chemical characteristics of materials on site for use in developing remedial alternatives, disposal requirements, technical limitations, and funding requirements; and
- Obtain a quantity and quality of data needed for assessing potential remedial alternatives.

1.3 Site Location and Description

Site 077 (Eighth Street #2) is 25 foot by 100 foot property currently occupied by a commercial warehousing operation for industrial and automotive parts and supplies. As shown on Figure 1 - Site Location Map, prepared from the U.S.G.S. Topographic Quadrangle of Jersey City, New

Jersey, the site is located in the northeastern section of Jersey City at 40°43'37" north latitude and 74°03'04" west longitude. The site is located at 383 Eighth Street, Jersey City, Hudson County, New Jersey, which according to the Tax Map of Jersey City and the Tax Assessors Records, is designated as Block 417, Lot 28 owned by Modern Village Development Corporation (MVDC). Figure 2 – Boundary and Topography Survey presents a portion of the tax map that covers the general site area including the property of concern and adjoining properties included in this study as additional properties of concern. Figure 3 - Site Layout Map shows the property located along the south side of Eighth Street.

The lot is fully covered by the one-story block and brick structure constructed on wall foundations. The void space between the foundations was filled using miscellaneous soil, cinders, demolition debris, and chromate waste. The rectangular warehouse is constructed with a concrete slab floor, brick and block interior and exterior structural support walls with wood and plaster interior, non-load bearing walls. Access to the building is through an entrance door and garage door leading off Eighth Street. An additional access has been cut through the east wall into an adjoining warehouse constructed in 1989.

A 50-foot by 100-foot cinder-block warehouse was constructed in 1989 adjacent to the east wall of the site and identified as 379 through 381 Eighth Street. The cinder block wall of the newer warehouse was constructed within inches of the east wall of the site. This property formerly was known as Site 076 due to reported presence of chromate waste removed in 1989, and the property was subsequently removed from the list.

A City right-of-way for Eighth Street borders the north property boundary. Three residential properties are southeast of the site. Vegetation and fencing associated with residential back yards end at the back wall of the Eighth Street building. A wood and brick warehouse currently occupied by the Art Moving Company, is located immediately adjacent to the south wall. The structure runs the full width of the property with no space between the structures. A wood and brick warehouse or commercial facility, known as the Johnson Building, is located immediately adjacent to the west wall. The structure runs the full length of the property with a narrow space in between.

1.4 Site Soil and Geology

Current land surfaces consist of an upland area historically used for commercial operations. The site is entirely covered by the warehouse.

Historical records indicate buildings formerly located on the site were razed and the resultant cavity filled with demolition debris and miscellaneous fill. During the soil/fill investigations, two to eight feet of fill, dominated by chromate nodules, gravel, coal ash and cinders, brown, gravely silty sands, broken concrete, and broken rock was encountered throughout the site.

Regional soil reports indicate that the unconsolidated material underlying the site consists primarily of river sediments and glacial till deposits.

Regional geology reports indicate the uppermost bedrock consists of grey arkose (sandstone), conglomerates and red shales of the Stockton formation, which is the oldest formation of the Newark Group of sedimentary deposits. Due to its proximity to the Palisades Ridge, diabase intrusions of elongated coarse-grained quartz formations are probable beneath and/or near the site.

1.5 Site Hydrogeology

Four monitoring wells were installed around the site during PSC activities with locations selected to position the monitoring wells within and beyond the area of concern. The monitoring wells were installed at the following locations; MW-01 in the center of the warehouse, MW-02 along the southern sidewalk of Seventh Street, MW-03 to the east of the warehouse in the parking lot, and MW-04 to the north of Eighth Street. Well depths were selected to place well screens across the water table and through the full depth of fill. Water level measurements placed the water table at approximately four to six feet below ground surface, which is approximately one to two feet above mean sea level (AMSL).

Water level measurements collected during well sampling activities indicate groundwater at the site flows from southeast to northwest. Due to wide-spread filling and numerous subsurface sewer lines and water service lines, significant variation in shallow groundwater flow characteristics is expected. Variations may include preferential flow along more permeable pipe bedding and infiltration or exfiltration into sewer line pipes.

Geologic reports for the area indicate that groundwater monitored in the local glacial till deposits have low hydraulic yields and are of poor quality. The geologic reports also state that the glacial till aquifers are significant for their recharge of the deeper aquifers and transport of shallow groundwater to local surface water bodies.

The Stockton Formation is a locally important aquifer with wells that produce between several gallons per minute (gpm) to several hundred gpm. The majority of these wells are believed to be production wells serving as non-potable water sources. No such wells were identified within ½ mile of the site.

1.6 Topography

As shown on Figure 3 - Site Layout Map, surface elevations within and adjacent to the site range from 6 feet AMSL within the parking lot, located east of the site, to 7.5 feet AMSL along Seventh Street. The site is dominated by the single story warehouse, but also includes the sidewalk located between the warehouse and Eighth Street. The warehouse floor is level and lies approximately one foot below the finished grade of the sidewalk.

1.7 Surface Drainage Patterns

Surface drainage for the site is influenced by the warehouse structure. Precipitation falling on the warehouse is controlled by roof drains and down spouts, whereas precipitation falling onto the sidewalk runs north into municipal storm sewers constructed in Eighth Street. Since the site is fully developed, little or no precipitation is expected to infiltrate into the subsurface soils of the site.

1.8 Supporting Documents

Documents prepared by Kimball in support of the remedial investigations for this site include:

Background Investigation Report, Site 077 – Eighth Street #2, L. Robert Kimball & Associates, Inc., January 1998.

Site Specific Work Plan, Site 077 – Eighth Street #2, L. Robert Kimball & Associates, Inc., February 24, 1998.

Site Health and Safety Plan, Site 077 – Eighth Street #2, Jersey City, Hudson County, NJ, L. Robert Kimball & Associates, Inc., February 24, 1998.

Master Field Sampling Plan and Quality Assurance Project Plan, Hudson County Chromate Orphan Sites, Group 1 Remedial Investigations, L. Robert Kimball & Associates, Inc., July 21, 1997.

Master Health and Safety Plan, Hudson County Chromate Orphan Sites, Group 1 Remedial Investigations, L. Robert Kimball & Associates, Inc., July 21, 1997.

2.0 TECHNICAL REVIEW

2.1 Site Reconnaissance and Building Inspection

Kimball conducted a site reconnaissance and building inspection on May 29, 1997. Figure 3 depicts structures on and adjacent to the site. The site is currently used as a commercial hardware supply warehouse. A one-story warehouse of brick and block construction with evenly spaced brick and block pilasters covers the site. The northern one-third of the building (facing Eighth Street) is a retail storefront with metal shelves and display cases. The remaining portion of the building contains an employee lunchroom/locker area and inventory storage area. The inventory storage contains three rows of metal shelving units within the central portion of the room and shelves along the eastern, southern and western walls. Non-load bearing wood and drywall walls divide the storefront from the employee lunchroom and inventory storage area.

The building floor and bottom two courses of block are painted with grey epoxy paint, while the upper portions of the walls are painted white. Yellow hexavalent chromium chrystals were visible beneath bubbling paint on brick and morter walls within four feet of floor surface. No indications of chromium impact were visible on the floor surface. Numerous stress cracks and scratches were noted within the building's concrete floor. Several stress cracks were also noted within the brick and block walls. The stress cracks and scratches are believed to be the result of normal site operations and building settlement.

A sump with steel cover plate was noted in the storefront portion of the site. Inspection of the sump revealed it to be approximately two and one-half feet deep and approximately two feet square. The sump walls are concrete and contained a four-inch cast iron pipe within the southern sump wall. The sump was dry and contained minor amounts of dust and debris. No visible indication of chromium contamination was noted.

The Eighth Street right-of-way, which includes the concrete sidewalk in front of the warehouse, is an additional property that was investigated. The sidewalk surfaces were in good condition with only minor hairline cracks. No evidence of chromate impacts to the sidewalk slabs was noted.

The building is accessible from Eighth Street through an entrance for the store and an overhead garage door, and through an access-way between the subject warehouse and the adjoining two-story warehouse located immediately to the east.

Investigations conducted in 1990 by consultants for the current owners report that chromium was detected in surface soils between 22.1 mg/kg and 154 mg/kg on the adjoining property along its western exterior wall. The adjoining property was formerly identified as Site 076 at 379 to 381 Eighth Street. The reports also indicate that approximately 15 cubic yards of surface soil were excavated in 1988 within three feet of the Site 077 eastern exterior wall and removed off-site. The former Site 076 was removed from consideration as a chromate waste site following the removal of contaminated soil and placement of a polyethylene barrier between new concrete flooring and the underlying soil.

2.1.1 Surface Wipe Samples

Kimball completed building wipe samples on March 23 and 26, 1998 and October 13 and 19, 1999. Wipe samples were collected from selected locations as "before and after" samples to document concentrations of hexavalent chromium on the respective building surfaces prior to and following intrusive sampling activities. Building surface wipe samples were collected from six (6) locations within the warehouse. Figure 4 – Sample Location Map in Appendix A presents the sample locations completed during this work.

Building wipe samples were collected by wiping a sterile 3-inch x 3-inch sterile gauze pad over a 10 cm x 10 cm area in accordance with Section 4.8.3 of the FSP/QAPP and SOP 114. The gauze pads were then put into laboratory supplied sample bottles and submitted to the analytical laboratory for analyses of hexavalent chromium and total chromium. Wipe samples were collected from selected locations before and after the sampling efforts.

2.1.2 Building Chip/Drill Sampling Locations Completed

Kimball completed building chip/drill sample collection on March 23, 24, 25 and 26 1998; October 13, 1999; and December ~~13,~~ 1999. Building chip/drill samples were collected from twelve floor sample locations and fifteen wall sample locations as shown on Figure 4.

Intact concrete cores were cut from the floor slab using a four-inch diameter diamond bit core drill and water. Concrete samples were collected from the four-inch diameter concrete cores cut from the building floor and sidewalk at sample locations 01 through 10, 32 and 33 to determine the amount of chromium that has migrated from subsurface soil into the floor slab. A total of thirty-six samples were collected from the cores cut from the building floor and sidewalk in accordance with Section 4.8 of the FSP/QAPP and SOP 112 and 113.

Each concrete core, measuring greater than 4 inches long, was sampled at the upper surface, lower surface and mid-point. A carbide tipped steel drill bit was used to collect sufficient sample mass from the concrete cores.

Chip/drill samples were collected from the block and brick interior walls and the mortar to determine the concentrations of chromium that has migrated from the subsurface soil into the walls. Building chip/drill samples were collected from 14 wall sample locations, and one sump location. Chip/drill samples from the building walls were collected from approximately six inches and three feet above the floor. Paint was removed from each sample location before sampling by manual scraping to mitigate the potential for matrix interference's from fugitive paint chips. Sufficient sample mass (approximately 30 to 40 grams) was collected at each location by drilling multiple holes into the bricks, blocks, and mortar using a carbide tipped steel drill bit. The powdered building materials were collected on cardboard panels lined with clean aluminum foil held beneath the drill bit. To prevent cross-contamination, the drill bit was decontaminated between sample locations and the cardboard panel was relined with new, clean foil. Chip/drill samples were submitted for hexavalent chromium and total chromium chemical analyses.

The building walls were repaired by filling the drill holes with hydraulic cement and repainting with epoxy paint.

2.1.3 Significant Events and Variations from the Work Plan

Planned sample location 22 was not sampled due to immovable, permanently mounted shelving units. Planned sample location 25 was not sampled due to natural gas service line and meter.

Sample analyses performed on samples from all floor locations and half of the wall locations were rejected due to lack of proper analytical documentation. Wall sample locations 21, 23, 24, 26 and 28 were resampled on December 13, 1999 to recollect chip/drill samples for chemical analyses. Three additional soil borings were completed in the building floor to replace missing soil analysis results.

2.1.4 Health and Safety Monitoring

Work was performed during the multiple sampling events in accordance with the Site Specific Health and Safety Plan developed for the site. A Health and Safety Officer monitored work procedures, conditions, and air quality during all building substrate investigation activities.

Air monitoring for volatile organics, particulates, and hexavalent chromium was conducted in accordance with the Master Health and Safety Plan and Site Health and Safety Plan. Air monitoring was conducted within the work zone during building sampling. Background readings at the upwind perimeter of the site were recorded only during sampling outside of the warehouse.

Real time air monitoring for volatile organics was conducted during sampling using hand-held photoionization and flame ionization detectors. Real-time air monitoring for particulates was conducted during soil sampling using a Personal Ram on a sample technician. During exterior soil boring operations particulates also were monitored by a omnidirectional dust monitor, trade name Dataram, at the down wind edge of the drilling work area. The results of the air monitoring were recorded in the Health and Safety Log Book. Equipment calibration was performed daily and recorded in the Equipment Calibration Log. The Dataram's stored measurements were downloaded to a portable computer and printed out and submitted to the NJDEP Health and Safety Office immediately following work completion.

Two dust samples were collected during intrusive work inside the building using a high-volume air sampler with microfine dust cartridge. One sample was collected on the first day of sampling during the March 1998 sampling, and the second sample was collected during exterior soil boring and sampling conducted on October 13, 1999. The dust samples were submitted to Phillips Analytical for analysis of hexavalent chromium concentrations.

Air monitoring results were delivered to the NJDEP Health and Safety Representative on a weekly basis, in an air monitoring report. Complete air monitoring records are on file with the NJDEP.

2.1.5 Management of RI Derived Wastes

RI derived wastes from the building investigations was limited to spent carbide tipped drill bits, cardboard panels and aluminum foil used for sample collection. These materials were containerized and disposed of as municipal waste at the completion of sampling activities.

2.2 Geophysical Investigations

Kimball geologists investigated exterior boring and groundwater monitoring well locations for utilities and other possible buried hazards using electromagnetic induction (EMI) profiling, ground penetrating radar (GPR), and magnetic surveying.

2.3 Soil/Fill/Debris Investigation

2.3.1 Sampling Locations Completed

Kimball sampled soil between March 23 and 26, 1998; October 13, 1999; October 19 and 20, 1999; and December 13, 1999. Soil/fill/debris samples were collected from twelve (12) on-site soil borings (1 through 10, 32 and 33) and three (3) off-site soil borings (29, 30 and 31).

Figure 4 - Sample Location Map presents the soil boring locations completed during this work. The State Plane Coordinates of the sample locations are provided in Table 2 in Appendix B. Observations obtained during intrusive sampling operations are noted in Appendix C - Boring Logs.

The soil borings located inside the building and in the sidewalk were advanced from the ground surface until refusal or natural material, generally encountered at two to fourteen feet depth. A core drill with four inch diameter bit was used to core through the concrete floor and sidewalk slabs. Soil samples were collected through the core holes using two-inch diameter split-spoon samplers driven by an electric jackhammer.

Soil borings 29, 30 and 31, which were located off-site, were advanced using a truck-mounted drill rig (Mobile B-57) with eight-inch hollow stem augers. Soil samples from these borings were collected using two and/or three-inch diameter split-spoon samplers driven continuously on two-foot intervals from the ground surface to bottom of borehole. Soil borings 04, 09 and 10 were revisited in October, 1999 and advanced by the direct-push method with a Geoprobe® rig. Samples were collected from the Geoprobe® borings using a four-foot long Macrocore® sampler equipped with an internal acetate liner. Upon completion, soil borings not converted into monitoring wells were sealed with Portland cement/bentonite slurry by tremie grout methods.

Each split-spoon was opened and characterized by the field geologist for visible characteristics and indications of contaminants and screened for volatile organic vapors. At least two soil samples were packaged from each split-spoon collected from the ground surface to the bottom of fill. One sample was selected from a six- to twelve-inch interval representative of the upper portion of the spooned interval and the second sample from a six- to twelve-inch interval representative of the lower portion of the spooned interval. When one or more discrete changes in material occurred in the spoon, such as a fill to sand interval or layer of waste, then discrete samples were selected representative of the various types of materials in the spoon.

All soil samples collected within the warehouse, from the sidewalk borings and selected samples from the off-site soil borings were analyzed for contaminants of concern; hexavalent chromium, total chromium, antimony, beryllium, cadmium, nickel, and vanadium. Two soil samples, collected from SB04 and SB10, were analyzed for TCL Volatiles +10, TCL Semi-Volatiles +20, TCL Pesticides & PCBs, total petroleum hydrocarbons, particle size distribution and waste characteristics. Samples submitted for particle size distribution were separated into three size fractions by the laboratory and each size fraction was analyzed for total and hexavalent chromium.

2.3.2 Significant Events or Variations from the Work Plan

Three off-site soil borings (SB-29, SB-30, and SB-31) were added to the investigation for the installation of flush-mounted monitoring wells to assess groundwater flow characteristics and groundwater quality. As previously stated, the borings were advanced using a truck-mounted drill rig equipped with hollow stem augers. Continuous split-spoon samples were collected from the borings with selected soil samples submitted for laboratory analysis.

Soil/fill/debris samples collected from sample locations 01 through 10 during the March 1998 sampling event were submitted to Core Laboratories, Inc. of Edison, NJ for analyses. However, during laboratory restructuring, the data for these samples were lost before the reports were prepared. Kimball revisited the site and collected soil samples from a limited number of selected locations mutually agreed upon by the NJDEP, Kimball and the property owner.

Soil borings SB04, SB09 and SB10 were revisited on October 13, 1999 and soil samples were collected for chemical analyses. Samples from these three borings were collected using Geoprobe® techniques from the same intervals as the previous investigation and submitted for chemical analyses to replace the missing data. The actual drilling locations were offset less than one foot from the original boring location to avoid encountering grout materials used to seal the initial boring yet to collect sample from the same materials as was previously encountered. Following collection of soil samples from SB-04, a ¾ inch diameter groundwater monitoring well was constructed with the boring.

Soils borings SB32 and SB33 were advanced within the building during the October 1999 site activities to assess soil conditions beneath the front and rear portions of the building, respectively. These borings were advanced using the manual techniques as described above. The borings were sampled continuously until refusal.

2.3.3 Health and Safety Monitoring

A Kimball Health and Safety Officer monitored work procedures, working conditions and air quality during all subsurface investigation activities.

Air monitoring for volatile organics, particulates, and hexavalent chromium was conducted in accordance with the Master Health and Safety Plan and Site Health and Safety Plan. Air monitoring was conducted within the work zone during soil and water sampling, plus at the down-wind perimeter of the site during soil sampling. Background readings at the upwind perimeter of the site were recorded during sampling activities outside of the warehouse.

Real time air monitoring for volatile organics was conducted during sampling using hand-held photoionization and flame ionization detectors. Real-time air monitoring for particulates was conducted during soil sampling using a Personal Ram on a drilling helper and for exterior work an omnidirectional dust monitor, at the down-wind edge of the sampling work area. The results of the air monitoring were recorded in the Health and Safety Log Book. Equipment calibration was performed daily and recorded in the Equipment Calibration Log. The Dataram's stored measurements were downloaded to a portable computer and printed out weekly.

Two dust samples were collected during intrusive work using a high-volume air sampler with microfine dust cartridge. One sample was collected on the first day of sampling during the March 1998 sampling and the second sample was collected during Geoprobe® sampling conducted on October 13, 1999. The dust samples were submitted to Phillips Analytical for analysis of hexavalent chromium concentrations.

Air monitoring results were delivered to the NJDEP Health and Safety Representative on a weekly basis in an air monitoring report. Complete air monitoring records are on file with the NJDEP.

2.3.4 Management of RI Derived Wastes

Soil cuttings generated during advancement of on-site borings were replaced back into the respective boring after completion of the boring but prior to borehole sealing. Soil cuttings from off-site soil borings (29, 30 and 31) were placed in 55-gallon drums and transported to Hudson County Orphan Site 020 - Bayview Viaduct and disposed at approved solids discharge areas exhibiting visible chromate wastes at the ground surface. Analytical data from the off-site borings indicated that no elevated concentrations of contaminants of concern were present within the soil. In addition, no visible evidence of adverse impacts was noted during advancement of the borings.

Due to the limited volume of decontamination water generated on-site, the rinsates were containerized in a DOT approved 55-gallon drum and transported to Site 020 for disposal.

2.4 Groundwater Investigation

2.4.1 Well Installation and Sampling Locations Completed

Three off-site groundwater monitor wells (MW-02, MW-03 and MW-04) were installed in borings advanced by eight-inch hollow stem augers constructed using two-inch inside diameter, polyvinyl chloride (PVC) well screens and risers. MW-01 was installed inside the building using a Geoprobe driving 2 inch samplers and ¾ inch inside diameter, PVC well screen and riser. Well locations were selected to investigate the chemical characteristics of the unconfined aquifer and to determine the groundwater flow direction. Well locations are shown on Figure 4 - Sample Location Map, and Figure 9 - Groundwater Contour Map.

The NJDEP Technical Coordinator, NJDEP Geologist, NJDEP Project Manager and the Kimball Geologist reviewed preliminary hexavalent chromium data for soil samples collected in the soil/fill/debris investigation to decide where monitor wells should be installed. The data was also used to determine the length and depth of the well screen.

- Monitor well MW01 was installed in soil boring SB04 in the middle of the site in an apparently high chromate waste area at the site. The well screen was positioned across the water table, and terminated within apparently natural sand at a depth of 13 feet.

- Monitor well MW02 was installed in soil boring SB31, along the southern sidewalk on Seventh Street to the south of the site. The well screen was positioned across the water table, and terminated within apparently natural sand at a depth of 13 feet.

- Monitor well MW03 was installed in soil boring SB29 to the east of the adjacent warehouse in the parking lot. The well screen was positioned across the water table, and terminated within apparently natural sands at a depth of 12.0 feet.

- Monitor well MW04 was installed within soil boring SB30, along the sidewalk north of Eighth Street to the north of the site. The well screen was positioned across the water table, and terminated within apparently natural sand at a depth of 12.5 feet BGS.

The off-site wells were constructed through hollow stem augers in accordance with Section 4.5.3.2 of the Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP). The interior monitoring well was installed in accordance with NJDEP accepted guidelines following approval by the NJDEP Geologist. Well screen lengths were determined depending upon the depth of fill below the water table. Well construction logs are provided in Appendix C. Wells MW-02, MW-03, and MW-04 were developed in accordance with the FSP/QAPP using a centrifugal pump until development water was silt free. Well MW-01 was developed using a peristaltic pump until development water was silt free.

Groundwater samples were collected from the wells on December 13, 1999 in accordance with Section 4.5.3.4 of the FSP/QAPP. Standing water was purged from each well using a peristaltic pump equipped with a YSI closed-cell flow-through chamber until field measurements for pH, conductivity, dissolved oxygen, oxidation reduction potential, salinity, and temperature stabilized. Well sampling logs are presented in Appendix D.

Groundwater samples were collected in sample bottles provided by the laboratory and submitted to Chemtech for analysis. Four unfiltered groundwater samples and a duplicate were collected and analyzed for TCL Volatiles +10, TCL Semi-volatiles +20, TCL Pesticides & PCBs, TAL inorganics except cyanide, hexavalent chromium, TOC, total solids and total suspended solids. Four filtered groundwater samples and a duplicate were also processed for hexavalent chromium, TAL inorganics except cyanide, total solids and TOC.

One field blank was processed for TCL volatiles + 10, TCL semi-volatiles +20, TCL pesticides & PCBs, hexavalent chromium, and TAL inorganics except cyanide, and total organic carbon. One trip blank was processed for TCL volatiles + 10.

2.4.2 Significant Events or Variations from the Work Plan

The number of groundwater monitoring wells was increased from one well to four wells to better determine the groundwater quality and flow characteristics in the vicinity of the site. Three flush-mounted monitoring wells (MW02, MW03, and MW04) were added to the investigation due to the presence of substantial quantities of chromate waste and chromate blooms identified at the site. These monitoring wells were installed as described above and are shown on Figures 4 and 9.

Analytical results for all soil samples collected in 1998 were rejected due to the laboratory losing documentation. Kimball resampled a select portion of the site soils in 1999 and submitted the samples for metals analysis.

2.4.3 Health and Safety Monitoring

Well installation and sampling was performed in accordance with the Master Health and Safety Plan and the Site Specific Health and Safety Plan. Monitoring for volatile organics was conducted during well installation and sampling, with results reported to the NJDEP Health and Safety Representative. No detectable organic vapors above background were detected.

2.4.4 Management of RI Derived Wastes

Groundwater withdrawn in developing site wells and purging standing water for well sampling was containerized in DOT approved 55-gallon drums and transported to Hudson County Orphan Site 020 - Bayview Viaduct and disposed at the approved water discharge area per direction from the NJDEP Project Manager.

2.5 Surface Water Investigation

No surface water bodies occur on or near the site.

2.6 Sediment Investigation

No surface water bodies occur on or near the site.

3.0 FINDINGS

3.1 Building Investigation

3.1.1 Observations and Results of Background Research

Information obtained from historical aerial photographs and maps indicate that the site has been occupied by a warehouse since 1961, which suggests that site filling activities performed at the site are suspected to have occurred prior to 1961. Chromate waste was reportedly used as fill beneath the building.

In an undated report prepared by Aguilar Associates & Consultants, Inc. (AAC) for work completed in July 1987 for Modern Village Development Corporation (MVDC) at 383 8th Street (Site 077), AAC reported that in March 1987, MVDC removed and replaced concrete flooring in the Site 077 structure. During excavation of the concrete flooring, yellow staining was visible on the bottom of the concrete slabs. With the finding of yellow staining and crystals, the concrete slabs were removed from the Site 077 building and placed on the adjacent vacant lot immediately west of the Site 077 structure (NJDEP Site 076 at 379 - 381 8th Street) to await waste classification and disposal. New concrete was poured into the structure.

The new concrete floor was constructed, and an inspection of the warehouse facility by the Jersey City Health Division (JCHD) followed. At the time of the inspection, the concrete block walls in the warehouse were stained with various colored materials and showed evidence of crystal growth. During the inspection, Mr. Earl Z. Tex Aldredge of the JCHD expressed concerns about the possibility of chromium in the soil beneath the facility and requested that employees don dust masks while working within the building. Mr. Aldredge requested that the crystalline material be removed and a sealing material sprayed on the walls to prevent further "wicking" of the contaminants from the soil underneath the floor. Mr. Aldredge also requested that a sampling program be developed to determine the presence of chromium particulates within the facility.

On April 15, 1987, Aguilar Associates & Consultants, Inc. (AA&C), under contract with Modern Village Development Corporation (MVDC), prepared and implemented a sampling plan for air quality monitoring within the newly renovated facility. On April 24, 1987, AA&C submitted a proposed air sampling plan. Mr. Aldredge approved the air sampling plan on July 7, 1987 and AA&C implemented the plan on July 10, 1987. The results of air sampling indicated no detectable concentrations of chromium in the air.

On June 15, 1987, AA&C submitted a foundation sealing plan to the City of Jersey City. A sealing material was applied to the interior walls of the Site 077 building on July 24, 1987.

In March and April of 1988, the New Jersey Department of Environmental Protection (NJDEP) conducted a Presampling Assessment for Site 077 (383 Eighth Street) and Site 076 (379-381 Eighth Street). The Presampling Assessment documents report the following:

- Site 077 consisted of a warehouse located at 383 8th Street. Chromate waste was reportedly used as fill beneath the building.
- Concrete excavated from beneath the floor of the Site 077 structure was stored at 379-381 Eighth Street (NJDEP Site 076) in five 55 gallon drums. The waste was classified by NJDEP-BHWC as Id #27 and later disposed off-site.
- Soil was partially excavated and six inches of concrete was poured as new flooring inside the Site 077 structure.
- At the time of the presampling assessment, samples were not taken at Site 077 due to inaccessibility. Samples also were not collected at the adjacent site (NJDEP Site 076) because remediation was in progress.
- As of April 18, 1988 a building was being constructed over the vacant lot (379 - 381 8th Street), formerly listed as Site 076, immediately west of the Site 077 structure.

March 8, 1990 - Accutech Environmental Services, Inc. (Accutech), under contract with Modern Village Development Corporation submitted a report of Subsurface Investigation for Modern Development. Although the report is written listing the site as 383 8th Street, which at that time was the office for MVDC, review of the report drawings indicate that sampling was conducted at the former Site 076 which included former Lots 29 and 30 (Current Lot 33) of Block 417 at 379 - 381 8th Street. The Accutech report provided the following:

- The investigation conducted to a maximum of five feet deep found soil on the former Site 076 property consisted of naturally stratified drift and urban fill. The soil was described as a black, silty, sand fill with pockets of ash and slag. An abundance of pebbles, gravel, and bricks intermixed with pieces of concrete was also noted.
- A total of nine borings were drilled with three soil samples (A, B and C) taken from each boring. Samples were collected at the following depths: "A" samples were collected between 0" and 6", "B" samples were collected between 24" and 30" and "C" samples were collected between 54" and 60". Samples were analyzed for Total Chromium under EPA method 7190 at a state licensed laboratory. Obstructions prevented "C" samples from being taken at B2, B7, B8 and B9.
- Total chromium concentrations in the surface samples (0 to 6 inches) ranged from 22.1 mg/kg to 154 mg/kg.
- Total chromium concentrations in shallow subsurface soil (24 to 30 inches) ranged from 9.5 mg/kg to 32.8 mg/kg.
- Total chromium concentrations in deeper subsurface soil (54 to 60 inches) ranged from 2.9 mg/kg to 32.2 mg/kg.
- Surface soil within three feet of the Site 077 exterior west wall was excavated and disposed off-site prior to Accutech's investigation. The depth of excavation is not recorded. Assuming the full length of the building and three foot wide excavation, than an excavation less than two feet deep would result in the 15 cubic yards of material removed from the site in 1988.
- Thirty mil polyethylene was placed over the exterior face of the cinder block wall on the west side of the Site 077 structure and concrete poured into the excavation.

Accutech suggested that the variation in chromium concentrations in surface soil at the former Site 076 resulted from cross-contamination from soil excavated along the west wall of the Site 077 structure in 1988. The sample results indicated that chromium concentrations decrease with depth and the higher concentrations tend to be concentrated on the southwest side of the property.

Results of the Kimball building inspection confirmed chromate impacts to building walls and floors. Loose and bubbled paint, caused by accumulations of hexavalent chromium crystals beneath the topical epoxy paint, was noted at several areas within the northeastern section of the warehouse. These areas of loose paint were only noted on the first two courses of block above the floor slab. These block courses had been painted with grey epoxy paint. Chromate blooms were not encountered during collection of the upper samples of brick and mortar collected approximately three feet above the floor.

Hexavalent chromium blooms were also noted on the bottom of concrete cores cut from the floor during advancement of borings SB-04 and SB-05. The measured thickness of visible hexavalent chromium leaching into the cores ranged from 1.8 inches in SB-04 to 0.5 inches in SB-05.

3.1.2 Results of Geophysical Surveys

The geophysical surveys confirmed utility locations extending into the site from lines marked by the involved utility companies with known subsurface structures in the area of the site. Geophysical methods were used to clear the proposed boring locations prior to commencement of the soil boring program. Some borings were moved from areas of identified subsurface anomalies to areas identified clear of obstructions. No geophysical investigations were conducted at building wall sample locations.

3.1.3 Results of Data Validation and Reliability Evaluation

Nine wipe samples and two field blanks were collected and submitted for analysis of total and hexavalent chromium. Eighty-seven building samples and six duplicate samples were collected and submitted for 195 analyses. Core Laboratory Inc. of Edison, NJ and Chemtech Group processed three Sample Delivery Groups for wipe samples and six Sample Delivery Groups for building samples. The NJDEP and its consultant QSEA, Inc. completed data validation. Both Kimball and NJDEP store copies of full data packages. Copies of the QSEA Inc. validation report and NJDEP validation comments and associated responses and corrections are stored by the NJDEP in Trenton, NJ.

Reliability of the data was established using the results of the data validation received from the laboratory, QSEA and the NJDEP. Rejected data were assumed to be unreliable due to analytical or sample matrix problems. Analytical results presented in Tables 2 and 3 of Appendix B include the additional qualifiers from the data validation reports. Table 4 summarizes the rejected data.

Duplicate soil samples were collected and analyzed at a rate of five percent. Only the relative percent differences (RPD) for the elements of concern were calculated. Listed below are the original sample numbers, duplicate sample numbers and elements exceeding 20 % RPD.

ORIGINAL SAMPLE NUMBER	DUPLICATE SAMPLE NUMBER	ANALYTES EXCEEDING 20% RPD
077BD02-Top	077BD02D-Top	---
C004006	C00400D	Cr & Cr^{+6}
C033007	C03300D	---
077BD16-0.4-0.7	077BD16D-0.4-0.7	Cr^{+6}
077BD17-3.25-3.3	077BD17D-3.25-3.3	Cr
077BD19-3.3-3.5	077BD19D-3.3-3.5	---
C02103	C02103D	Cr^{+6}

Two field blanks were processed along with the building samples. One out of the two field blanks analyzed for chromium had concentrations above the method detection limit. Analytical results presented in Tables 2 and 3 of Appendix B include the additional qualifiers from the data validation reports. Table 4 summarizes the rejected data. The only results that were rejected was two of the five total organic carbon analyses.

Hexavalent chromium pre-digestion and post-digestion spikes were processed for each of the five batches. The pre-digestion spikes yielded percent recoveries ranging from 74.2 % to 195.4 %. Three of the spikes were within the acceptable limits or 75% to 125%. The post-digestion yielded percent recoveries ranging from 91.0 % to 115.3 %. Three out of four post-digestion spikes were within the acceptable limits of 85% to 115%. Table 5 summarizes the hexavalent chromium spike recoveries. The analytical results were reviewed for percent recovery to evaluate the potential and significance for sample matrix interference upon hexavalent chromium results provided by the laboratory.

3.1.4 Results of Chemical Analyses

Results of the building chip/drill analyses were compared with the NJDEP Soil Cleanup Criteria published on May 12, 1999. The hexavalent chromium cleanup criteria for comparison are the NJDEP Residential Direct Contact Cleanup Criteria for inhalation (20 mg/kg) and NJDEP Non-Residential Direct Contact Cleanup Criteria for allergic Contact Dermatitis (25 mg/kg).

A total of 87 building chip/drill samples were collected from 24 locations in the building walls, floor and the sidewalk. All building chip/drill samples were submitted for analyses. To satisfy QA/QC requirements, seven duplicate chip/drill samples were also collected and submitted for analyses.

Hexavalent chromium concentrations from eleven samples were found to exceed the restricted use criteria of 20 mg/kg for non-residential inhalation risk and 25-mg/kg residential direct response risks. Results of chemical analyses are presented on Figure 5 - Building Chip/Drill Sample Analytical Results - Hexavalent Chromium, Total Chromium and Trivalent Chromium. Table 1 presents a general summary of all building chip/drill, wipe, soil, and groundwater samples collected at the site. Specific summaries of analytical results for chip/drill and wipe samples are presented in Tables 2 and 3.

A review of chip/drill analytical data indicates elevated presence of hexavalent chromium concentrations at nine wall locations and two floor locations. The highest concentration was in sample 077BD16-0.4-0.7 (5,330 mg/kg), collected from the building mortar between bricks, at a height of 0.4 to 0.7 feet above the floor slab. The sampled location contained visible bright yellow chromium crystals on the mortar. Visible evidence of hexavalent chromium leaching onto building materials was also noted within the samples collected within one foot of the floor at locations 19 and 20.

As shown on Figure 5, elevated concentrations of hexavalent chromium were primarily limited to those samples collected closest to the floor slab, with the exception of sample 077BD19-3.2-3.5 which was reported to contain 22.8 mg/kg of hexavalent chromium. No visible evidence of chromium leaching was apparent at this location in the building bricks.

In addition to wall samples, visible evidence of chromium leaching into the building structure was noted at soil boring locations 4 and 5. Concrete cores cut from the building floor at these locations revealed yellow staining on the bottom of each core. The bottom 1.8 inches of core cut from location 4 was stained bright yellow, and the bottom ½ inch of the core cut from location 5 was also stained. Samples collected from the concrete cores indicated elevated concentrations of hexavalent chromium at locations 4 and 32. No laboratory analytical data exists for the concrete core taken from location 5 due to the loss of data by the analytical laboratory.

The data indicated that only samples collected from the bottom of each respective core contained elevated concentrations of hexavalent chromium in exceedance of the NJDEP soil action levels. These data suggest that the upward migration of chromium ions into the building structure are somewhat hindered by the concrete floor slab, but appear to migrate more readily through the less dense cinder block and mortar walls. The building walls likely extend some distance below the finished floor grade to the structural footers for the building and are in contact the underlying chromate waste layer. The buried wall members provide a direct pathway for fugitive chromium ions to migrate into the building walls.

The data also indicate no clear link between building wall substrates (i.e., brick/blocks and mortar joints) and upward migration of chromium impacts. Where elevated concentrations of hexavalent chromium were reported in samples collected from the bricks/blocks of the walls, similar (same order of magnitude) concentrations of hexavalent chromium were reported for the associated mortar samples.

Wipe samples were collected from six locations during site investigation activities. The wipe samples were collected to evaluate the concentrations of total and hexavalent chromium present on the building floor before and after intrusive sampling efforts were conducted, and to document that site activities had not created fugitive dusts containing elevated concentrations of chromium ions. Table 2 presents the results of laboratory testing of the wipe samples. As shown on the table, trace levels of total chromium were reported within several wipe samples. However, the reported concentrations were well below the allowable inhalation value of 20 mg/kg. The data also show no relative increase in detected total chromium concentrations between samples collected before and after completion of intrusive activities.

No hexavalent chromium was detected above laboratory method detection limits within the wipe samples.

3.2 Soil/Fill/Debris Investigation

3.2.1 Observations and Results of Background Research

Review of historical maps and aerial photographs indicate that the site was previously occupied by a small shed and stable. These structures were razed and replaced by the current warehouse structure prior to 1961. During site development activities, an unknown volume of chromate waste fill was placed on the site. The current structure was then constructed atop the chromate waste fill; however, the exact dates of events regarding placement of fill and construction of site building is unknown. As stated in the previous section, evidence of chromate waste impacts was discovered during renovations to the subject site and neighboring lot. Regulatory agency involvement included the Jersey City Health Division and the NJDEP. Results of prior investigations indicate that chromate wastes are likely beneath the concrete flooring of the single story warehouse.

The site is covered by the warehouse structure and it's associated concrete floor. The floor was noted to vary in thickness from 0.6 feet to 0.8 feet thick, underlain by 0.1 feet (SB02 and SB06) to 1.4 feet (SB05) of crushed 2B-sized gravel. The gravel layer appeared to vary in depth to provide a flat surface grade for placement of the concrete floor. No synthetic vapor barrier (i.e., plastic sheeting) was noted between the concrete floor and gravel subbase layer.

A discrete layer of chromate waste was noted to underlie the majority of the building floor and sidewalk slabs located in front of the building. The chromate waste varied in thickness from 0.2 feet in SB07 to 2.0 feet in SB01, SB02, SB04, and SB33. No visible chromate waste was noted in borings SB03 and SB08. Apparent hexavalent chromium blooms, observed as yellow crystals or yellow/green staining on gravel or the underside of the concrete floor, were noted in SB01, SB04 and SB05.

Mixed fill materials consisting of coal cinders and ash, brown and grey fine to coarse sand, gravel, red bricks, and fire bricks were encountered immediately below the concrete floor in locations that chromate waste was not encountered. Due to the significant amount of bricks and brick fragments within the fill, advancement of borings within the warehouse by electric jack-hammer was very difficult. None of the soil borings advanced by hand encountered apparent natural soil, due mainly to difficult drilling conditions and frequent collapse of the boring within the loose cinder fill zones.

Chromate waste was not encountered as a distinct layer below a depth of 3.1 feet. This suggests that the chromate waste was placed after the majority of site was filled and was likely used to level the site for further development.

Off-site borings (SB29, SB30 and SB31) encountered significantly different soil than borings advanced within the site boundaries and sidewalk. Natural sand and gravely sand were encountered within several feet of ground surface within the off-site borings, with the exception of SB29. SB29, which was advanced within the parking lot located east of the new GKY Industries warehouse, encountered coal cinder and sand fill to a depth of 6.4 feet below ground surface before encountering the natural sand deposits. Meadow mat deposits were encountered in SB29 and SB31 at depths of 12.0 and 11.6 feet, respectively.

3.2.2 Results of Geophysical Surveys

The geophysical surveys confirmed utility locations extending into the site from lines marked by involved utility companies with known subsurface structures in the area of the site. Geophysical methods were used to clear the proposed boring locations prior to commencement of the soil-boring program. Some borings were moved from areas of identified subsurface anomalies to areas identified clear of obstructions.

3.2.3 Results of Data Validation and Reliability Evaluation

Thirty-six soil samples, two duplicate samples and one trip blank were collected and submitted for analysis. Core Laboratory Inc. of Edison, NJ and Chemtech Group processed three Sample Delivery Groups covering one hundred-one soil analyses. QSEA Inc., under contract with the NJDEP, and the NJDEP completed data validation. Kimball and NJDEP store copies of full data packages. Copies of the QSEA Inc. validation report and NJDEP validation comments and associated responses and corrections are stored by the NJDEP in Trenton, NJ.

Analytical data tables are provided in Appendix B. Table 1 summarizes of numbers of samples collected, archived, and the analyses requested. Table 6 presents the survey data for the borehole locations. Eleven soil samples were archived for possible future use. Tables 7 through 14 present the results of analyses with negations, rejections, and qualifications identified by the laboratory and the validator.

Reliability of the data was established using results of data validation received from the laboratory, QSEA and the NJDEP. Rejected data were assumed to be unreliable due to analytical or sample matrix problems. There were no rejections of data for the soil samples analyzed.

Duplicate soil samples were collected and analyzed at a rate of five percent. Only the relative percent differences (RPD) for the elements of concern were calculated. Listed below are the original sample numbers, duplicate sample numbers and elements exceeding 20 % RPD.

ORIGINAL SAMPLE NUMBER	DUPLICATE SAMPLE NUMBER	ANALYTES EXCEEDING 20% RPD
S030020	S03000D	Cd, Ni, Sb & V
S010008	S01000D	Cr^{+6} & Sb

One required trip blank was processed with soil samples analyzed for volatile organic compounds by the methanol preservation and extraction method. Contaminants were not detected above the contract required detection limit in the blank.

Hexavalent chromium pre-digestion and post-digestion spikes were processed for each of the three batches. The pre-digestion spikes yielded percent recoveries ranging from 93.8 % to 106.3 %. All three of the spikes were within the acceptable limits or 75% to 125%. The post-digestion yielded percent recoveries ranging from 93.7% to 98.4%. Both post-digestion spikes were within the acceptable limits of 85% to 115%. A post-digestion spike for SDG # 07715 was not analyzed. Table 5 summarizes the hexavalent chromium spike recoveries. The analytical results were reviewed for percent recovery to evaluate the potential and/or significance for sample matrix interference upon hexavalent chromium results provided by the laboratory.

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3.2.4 Results of Chemical Analyses

Thirty-six soil samples, including two duplicate soil samples, were collected from five on-site and three off-site soil borings and analyzed for contaminants of concern. Two of the samples were analyzed for organic parameters, particle size distribution, and waste characteristics. Sample locations are presented in Figure 4 - Sample Location Map. Initially, eight soil borings were advanced by manual methods within the warehouse structure and two soil borings were advanced within the sidewalk adjoining the warehouse to the north. However, due to laboratory error, analytical results from these initial borings were lost. Soil samples from onsite boring locations 4 (MW01), 9 and 10 were completed using a Geoprobe rig during subsequent site visits for installation of MW01 within the warehouse structure. Soil samples were also collected from off-site borings SB29 (MW03), SB30 (MW04), and SB31 (MW02) during off-site monitoring well installation activities. Boring logs for all soil borings completed as part of this investigation are presented in Appendix C.

Soil samples collected from four on-site soil borings (SB04, SB10, SB32 and SB33) were reported to contain elevated concentrations of hexavalent chromium above the NJDEP criteria of 20 mg/kg for non-residential inhalation risk. None of the samples collected from the off-site borings were reported to contain elevated concentrations of contaminants of concern.

Elevated hexavalent chromium concentrations, above NJDEP action levels, ranged from 25.6 mg/kg to 188 mg/kg. Elevated concentrations of hexavalent chromium were also detected in samples S010008 (57.8 mg/kg); S032005 (134 mg/kg); S032008 (177 mg/kg); and S033030 (42.5 mg/kg). Total and hexavalent chromium concentrations in all other samples were found below NJDEP cleanup criteria in all other samples.

Antimony was detected above its 14 mg/kg residential direct contact soil cleanup criteria in borings SB04, SB10 primarily in samples collected within the first two feet of fill. Nickel was detected at concentrations exceeding its 250 mg/kg residential direct soil cleanup criteria in soil borings SB04, SB10, SB32, and SB33 within the uppermost three feet of fill. Thallium was detected at concentrations exceeding its 2 mg/kg residential direct soil cleanup criteria in soil borings SB04 and SB10. Vanadium was detected above its 370 mg/kg residential direct contact soil cleanup criteria in soil borings Sb04, SB10, SB32, and SB33 within the uppermost three feet of fill. Chromium concentrations and other metals of concern met current soil cleanup criteria in all other samples collected from this depth interval.

Figure 6 – Contaminates of Concern for Soil Samples present sample locations and analytical data for specific sampling depths. Figure 7 - Soil Analytical Results - Hexavalent Chromium, Total Chromium and Trivalent Chromium, presents the summary of the hexavalent, total and trivalent chromium concentrations detected in soil samples collected from the site. Table 1 presents a general summary of all soil and groundwater samples collected at the site. Specific summaries of analytical data for soil samples are presented in Tables 3 through 7.

Figure 8 - Area of Chromate Waste Impacts, presents the horizontal extent of visible chromate waste and hexavalent chromium exceedances. Based on observed presence of chromate waste and laboratory analytical data, chromate waste is evident throughout the building. The volume of chromate waste and impacted soil at the site is estimated to be approximately 138 cubic yards.

TCL volatiles and total petroleum hydrocarbons met the most stringent NJDEP soil cleanup criteria at all sample locations and depths. TCL semi-volatiles benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene and indeno(1,2,3-c,d)pyrene were reported in site soil to exceed the NJDEP soil cleanup up criteria. Aldrin (0.11 mg/kg) was reported to exceed NJDEP residential direct soil cleanup criteria in the soil sample collected from 0.8 to 1.9 feet below ground surface in SB04.

3.2.5 Results of Particle Size Distribution Analyses

Table 3 presents the results of total and hexavalent chromium analyses performed on three size fractions collected from two soil samples processed for Particle Size Distribution from soil boring SB07. Hexavalent chromium concentrations detected in the coarse, medium and fine size fractions from both samples exceeded the most stringent NJDEP soil cleanup criteria. Comparison of total chromium and hexavalent chromium concentrations in the separate fractions indicate uniform analytical results for all three-fraction sizes.

3.2.6 Results of Waste Characterization Analyses

Table 7 presents a summary of analytical data for two soil samples processed for TCLP waste characterization. Two samples, collected from soil boring SB04 and SB10, were from visible chromate waste fill material, typical of the entire site. Results of waste characterization analyses indicate that detectable concentrations of four analytes (barium, chromium, and selenium) were found to leach from the samples. However, the concentrations of these analytes were well below the RCRA criteria for classification as hazardous waste. No organic compounds were detected during TCLP analysis.

3.3 Groundwater Investigation

3.3.1 Observations and Results of Background Research

Numerous subsurface utility trenches, storm water management systems and electrical conduits identified in Eighth Street and Seventh Street are expected to influence local groundwater flow patterns by diverting groundwater along preferential pathways created by these subsurface structures. Results of groundwater sampling conducted on properties north of the site indicate groundwater impacts from petroleum releases and historic fill.

As shown in the enclosed groundwater sampling logs in Appendix D, groundwater was encountered between 4 and 6 feet below the ground surface in the four monitor wells installed and sampled for this site. Comparing depth to water with surveyed elevations, the water table is at 1.62 feet in MW01, 2.15 feet in MW02, 1.98 feet in MW03 and 1.00 feet in MW04 above mean sea level. The relative difference between piezometric water surface elevations in MW02 and MW04 indicate groundwater flow from south or southeast to north or northwest, which coincides with local topography, but not anticipated flow from the topographic highlands to the west to the Hudson River. Figure 9 - Groundwater Contour Map presents the generalized groundwater flow trend (roughly south to north) based on the groundwater level measurements collected on December 13, 1999. Since the four monitoring wells were installed in a relatively straight line with respect to the site, calculated direction of groundwater flow may vary up to 45 degrees east and west of the general southwesterly slope in piezometric surface contours shown on Figure 9.

3.3.2 Results of Data Validation and Reliability Evaluation

One Sample Delivery Group (SDG # 07720) containing eight groundwater samples, two duplicate samples, one field blank and one trip blank were collected on December 13, 1999 in accordance with the approved work plan. QSEA Inc., under contract with the NJDEP, and the NJDEP completed data validation. Kimball and NJDEP store copies of full data packages. Copies of the QSEA Inc. validation report and NJDEP validation comments and associated responses and corrections are stored by the NJDEP in Trenton, NJ.

Analytical data tables are provided in Appendix B. Table 1 summarizes of numbers of samples collected and analyses requested. Tables 14 through 18 present the results of analyses with negations, rejections, and qualifications identified by the laboratory and/or the validator. Table 6 presents the survey data for monitoring well locations.

Reliability of the data was established using the results of the data validation received from the laboratory, QSEA and the NJDEP. Rejected data were assumed to be unreliable due to analytical or sample matrix problems. Negated data also were assumed to be suspect due to presence of blank contamination either in the method or field blanks.

Two duplicate water samples were collected and analyzed at a rate of twenty percent. Listed below are the original and duplicate sample numbers. The percent differences were calculated for the elements of concern. There were no analytes exceeding 20% relative percent difference (RPD).

ORIGINAL SAMPLE NUMBER	DUPLICATE SAMPLE NUMBER	ANALYTES EXCEEDING 20% RPD
G030057	G03005D	---
G03005F	G0300FD	---

Two field blanks were processed along with the ten groundwater samples and analyzed for TCL volatiles, TCL semi-volatiles, Pesticides/PCBs, TAL Inorganics, total solids, total suspended solids, total organic carbon, and hexavalent chromium. Two out of the two field blanks analyzed for TAL Inorganics had aluminum concentrations above the method detection limit. There were no rejections of data for the groundwater samples analyzed.

Hexavalent chromium pre-digestion and post-digestion spikes were processed for the batch. The pre-digestion spike yielded a percent recovery of 94.0% well within the acceptable limits or 75% to 125%. The post-digestion spike yielded a percent recoveriy of 91.8%. This was also within the acceptable limits of 85% to 115%. Table 5 summarizes the hexavalent chromium spike recoveries.

3.3.3 Results of Chemical Analyses

Figure 4 - Sample Location Map in Appendix A and Tables 14 through 18 in Appendix B present results of groundwater analyses.

Acetone was detected at a concentration of 70ug/l in the groundwater sample collected from MW04. This is below the Groundwater Quality of 700 ug/l for acetone. No other volatile organic compounds were detected in groundwater samples.

No semi-volatile organic compounds were found above reliable detection limits. No pesticide/PCB compounds were detected in the groundwater samples.

Fifteen TAL inorganic analytes were detected in the groundwater at the site at the concentration ranges as follow:

- Antimony, beryllium, cadmium, and nickel were not detected in either the filtered or unfiltered samples collected from the four monitoring wells. Vanadium was detected in the groundwater samples taken from MW01 and MW02, 10.4 ug/l and 2.3 ug/l, respectively. These quantities are below the requested level of detection.
- Total chromium was detected in the unfiltered sample collected from MW01 at a concentration of 54.1 ug/l, which is below the GQS of 100 ug/l. The filtered sample from MW01 did not

contain detectable concentrations of chromium. An estimated value for chromium from MW02 was listed by the laboratory as 1.9 ug/l, far below the GQS. Total chromium was not detected in the samples from MW03 and MW04.

- Hexavalent chromium was not detected in either filtered or unfiltered samples from all four monitoring wells.

- Lead was detected at 42.4 ug/l in MW01, exceeding the GQS of 10 ug/l. The filtered sample from MW01 was below reliable detection. Lead was detected at concentrations exceeding GQS in both MW03 (20.8 ug/l) and MW04 (17 ug/l and 19.9 ug/l) while the filtered samples from the same sources were both below reliable detection limits.

- Aluminum was detected in all groundwater samples. Only the unfiltered samples from MW01 and MW02 were above GQS. Iron and manganese were both detected above GQS in all groundwater samples. Sodium was found to be above GQS in all wells except MW01, which contained sodium at about half the GQS.

- Comparison of data between filtered and unfiltered samples indicate a marked decrease in concentrations for detected compounds in filtered samples, as would be expected with the exception of calcium, magnesium, potassium and sodium.

3.4 Surface Water Investigation

No surface water bodies occur on or near the site; therefore, no surface water investigation was conducted.

3.5 Sediment Investigation

No surface water bodies occur on or near the site; therefore, no sediment investigation was conducted.

3.6 Baseline Ecological Evaluation

The purpose of this baseline ecological evaluation is to determine if further investigation of chemical contamination is warranted relative to risk to environmentally sensitive areas. In accordance with the Technical Requirements for Site Remediation, this evaluation includes the following items:

- Identification of contaminants of ecological concern existing on-site;
- Identification of environmentally sensitive areas on or adjacent to the site; and
- Identification of potential migration pathways between sources of contamination and environmentally sensitive areas.

3.6.1 Contaminants of Ecological Concern

Environmental sampling and analysis confirm presence of chromate waste and coal ash and cinders containing metal contaminants of concern at concentrations that could present a risk to environmentally sensitive areas, if present.

3.6.2 Determination of an Environmentally Sensitive Area

Site 077 - Eighth Street is located in a fully urbanized portion of Jersey City with no reported or visible environmentally sensitive areas within 1/4 mile of the site.

3.6.3 Potential Migratory Pathways

The site is covered by concrete pavement covering all areas of detected contamination associated with chromate waste. Stormwater runoff flows off the site to stormwater drainage systems located in the nearby streets. Therefore, no pathway exists for contaminant migration by direct contact, surface runoff, or wind and stormwater erosion. However, contaminants of concern were detected in soil samples collected at or above the water table, and present potential risk for off-site migration through the Jersey City sanitary sewer line or the associated granular bedding materials. City of Jersey City engineering drawings indicate that the invert elevation of the sanitary sewer is several feet below the water table.

Groundwater was encountered at approximately 3 to 6 feet below the ground surface with elevated concentrations of several contaminants of concern noted in the soil above the waste. Concentrations of contaminants observed in one round of groundwater samples collected from the four monitoring wells constructed indicate aluminum, arsenic, iron, lead, manganese, and sodium exceed NJDEP groundwater quality standards. Contaminants of concern related to chromate waste were not detected in unfiltered and filtered groundwater samples.

The available data show no apparent migration of contaminants from site chromate waste to off-site local groundwater, thereby, eliminating the groundwater migration pathway to off-site environmentally sensitive areas.

4.0 RECOMMENDATIONS FOR FINAL SITE CHARACTERIZATION

4.1 Building Investigation

A. Building Investigation Program - We recommend inspecting the neighboring structures located to the west and south for visible indicators of chromate waste impacts due to potential leaching of chromium from identified on-site sources.

4.2 Soil/Fill/Debris Investigation

A. Soil Boring/Hand Auger Program - We recommend two additional soil borings be advanced within the Eighth Street right-of-way (immediately north of the sidewalk) and two additional soil borings be advanced within the sidewalk immediately east and west of the site to delineate the extent of chromate waste impacts noted beneath the sidewalk slabs located in front of the site. Figure 10 – Recommended Sample Locations – Final Site Characterization indicates the area recommended for additional soil sampling.

B. We recommend inspection of the residential property located immediately southeast of the site (Block 417, Lot U) for presence of chromate waste impacts. The inspection should concentrate on the northern portion of the property that borders the site.

C. Waste Characterization - We recommend no further investigation in characterizing site wastes.

D. Particle Size Distribution - We recommend no further investigation in characterizing site wastes in regard to particle size distribution unless chromate waste is encountered within the additional soil borings recommended for advancement within Eighth Street and the adjacent sidewalk. The additional samples would be beneficial in assessing distribution of chromium concentrations by particle size.

4.3 Groundwater Investigation

A. We recommend a second round of groundwater samples be collected and analyzed from the four monitoring wells constructed for this investigation. The second round of groundwater samples are needed to confirm the findings of this investigation and to meet project objectives in determining impacts to groundwater from contaminants identified on-site. Wells will be properly abandoned following conclusion of the investigation if no further exceedances of the GWQC.

4.4 Ecological Assessment

A. No environmentally sensitive areas exist on or adjacent to the site, the waste is contained within the building foundation and pavement, and results of groundwater analyses indicate the contaminants do not migrate beneath the site. Therefore, we recommend no further investigation or assessment related to ecological resources for the site

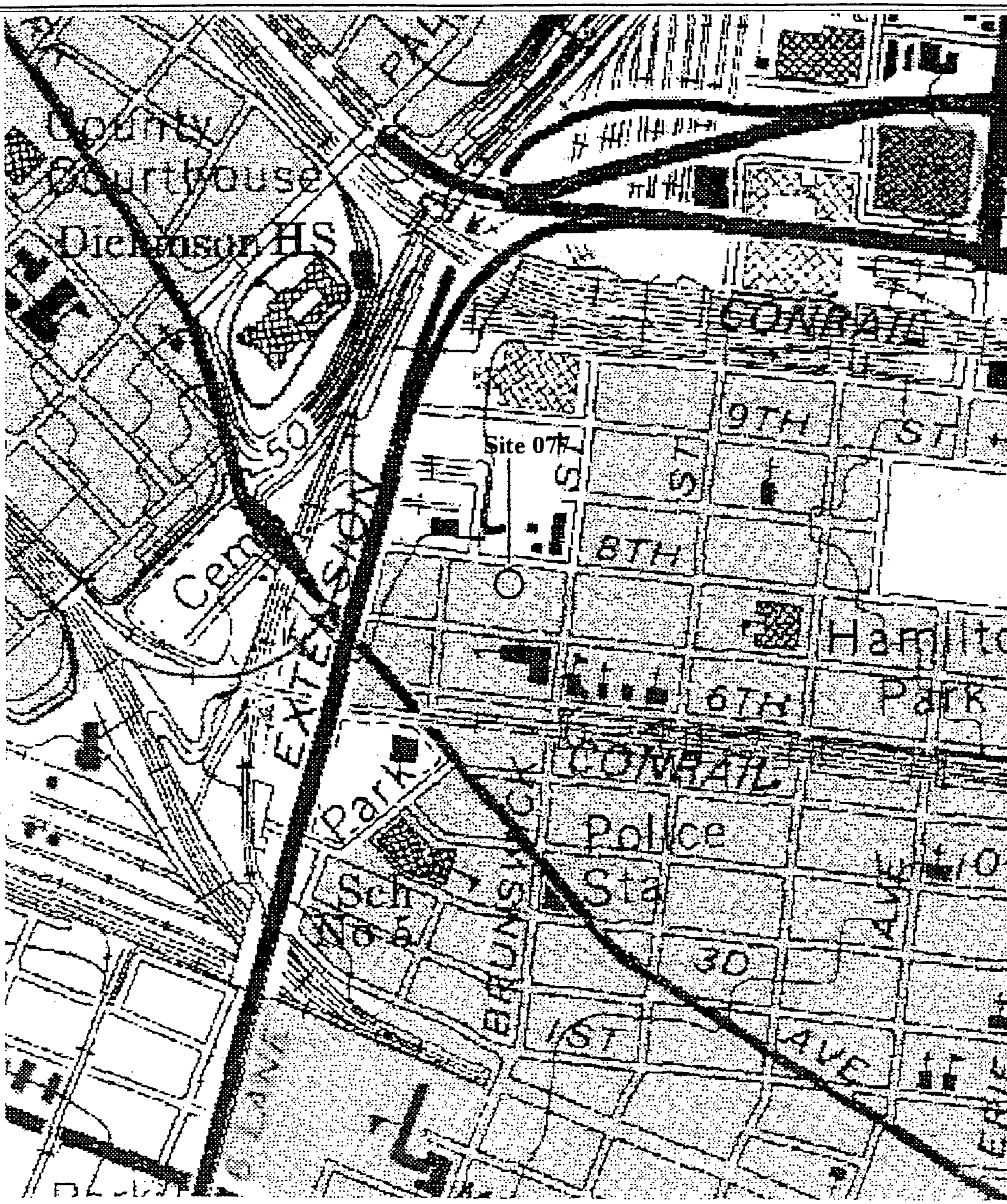
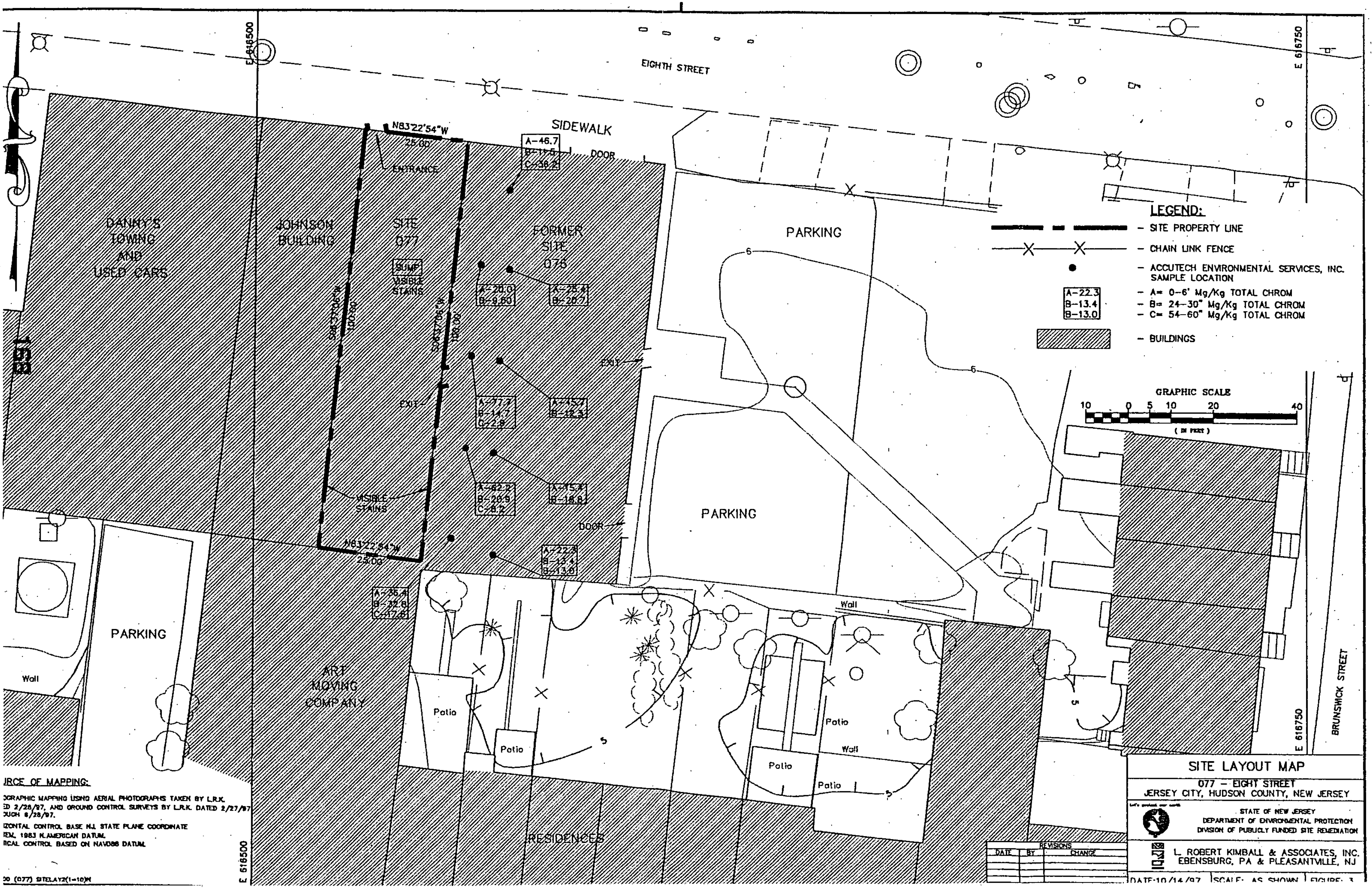


FIGURE 1
SITE LOCATION MAP
HUDSON COUNTY CHROMATE WASTE SITES - SITE 077
JERSEY CITY, HUDSON COUNTY, NEW JERSEY

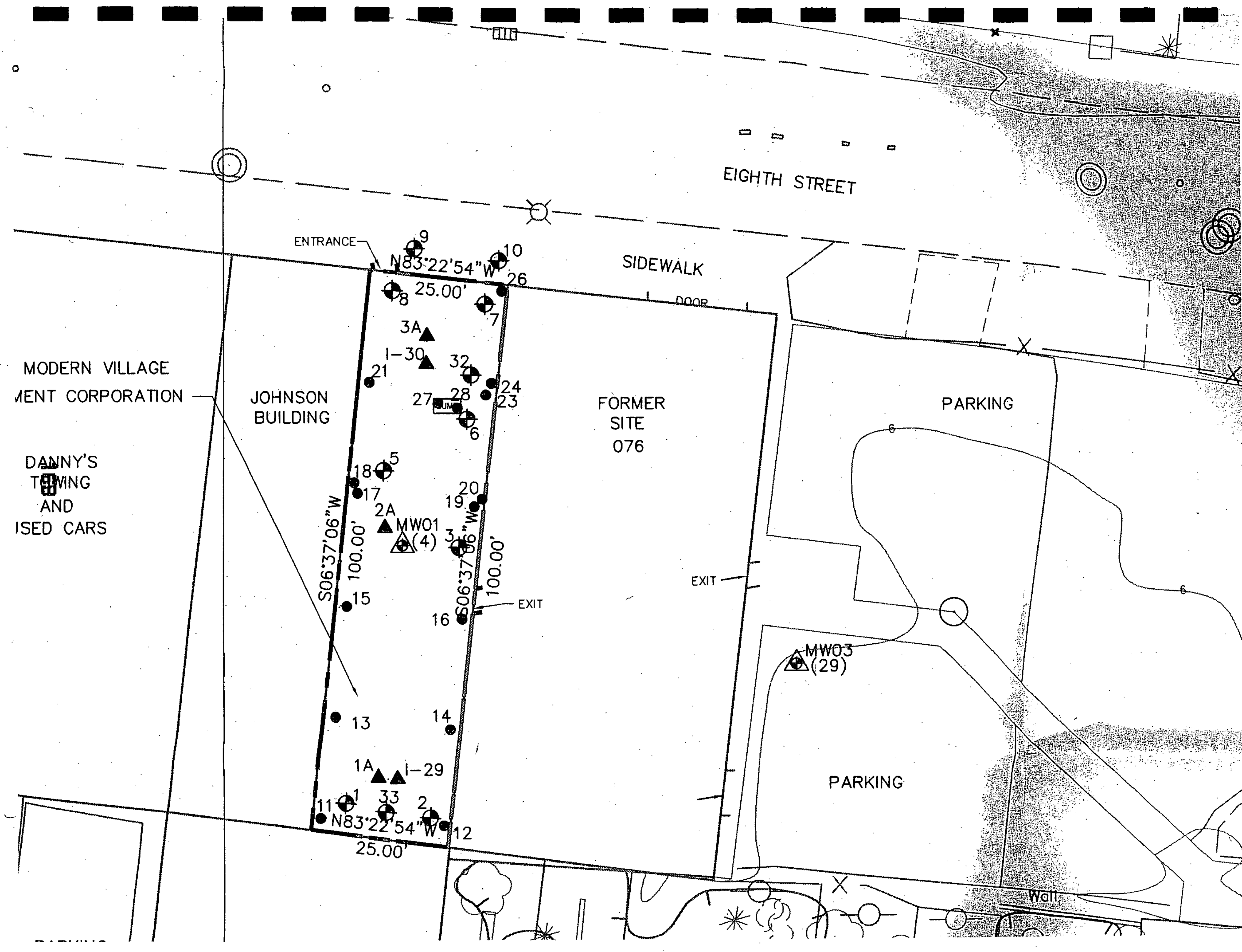
N

Source: U.S.G.S. 7.5 min Quadrangle, Jersey City, NJ, Photorevised 1981

Scale: 1" = 2,000'



EIGHTH STREET
SIDEWALK
DOOR
N83°22'54"W
25.00'
ENTRANCE
DANNY'S TOWING AND USED CARS
JOHNSON BUILDING
SITE 077
SUMP
VISIBLE STAINS
FORMER SITE 075
EXIT
PARKING
ART MOVING COMPANY
Patio
Wall
RESIDENCES
BRUNSWICK STREET
E 616500
E 616750
LEGEND:
- SITE PROPERTY LINE
- CHAIN LINK FENCE
- ACCUTECH ENVIRONMENTAL SERVICES, INC. SAMPLE LOCATION
A-22.3
B-13.4
B-13.0
- A= 0-6" Mg/Kg TOTAL CHROM
- B= 24-30" Mg/Kg TOTAL CHROM
- C= 54-60" Mg/Kg TOTAL CHROM
- BUILDINGS
GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
SITE LAYOUT MAP
077 – EIGHT STREET
JERSEY CITY, HUDSON COUNTY, NEW JERSEY
STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF PUBLICLY FUNDED SITE REMEDIATION
L. ROBERT KIMBALL & ASSOCIATES, INC.
EBENSBURG, PA & PLEASANTVILLE, NJ
REVISIONS
DATE BY CHANGE
DATE: 10/14/97
SCALE: AS SHOWN
FIGURE: 3


EIGHTH STREET
ENTRANCE
SIDEWALK
DOOR
N83°22'54"W
25.00'
MODERN VILLAGE
MENT CORPORATION
JOHNSON
BUILDING
DANNY'S
TOWING
AND
USED CARS
FORMER
SITE
076
PARKING
S06°37'06"W
100.00'
MW01
(4)
EXIT
MW03
(29)
1A
I-29
2A
3A
I-30
PARKING
N83°22'54"W
25.00'
Wall

LEGEND:

— SITE PROPERTY LINE

— CHAIN LINK FENCE

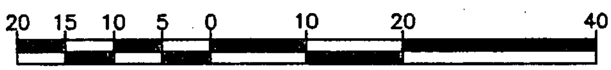
— MONITORING WELL

— WIPE SAMPLE LOCATION

— SOIL BORING LOCATION

— BUILDING CHIP/DRILL SAMPLE LOCATION

GRAPHIC SCALE



(in feet)
1 inch = 20 ft.

SAMPLE LOCATION MAP

SITE 077 — EIGHTH STREET #2
JERSEY CITY, HUDSON COUNTY, NEW JERSEY

Let's protect our earth

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF PUBLICLY FUNDED SITE REMEDIATION

L. ROBERT KIMBALL & ASSOCIATES, INC.
EBENSBURG, PA & TRENTON, NJ

02/09/00	SCALE: 1"=20'	FIGURE: 4

Appendix B
Table of Contents

List of Tables

Table 1
Site 077 - Eighth Street #2
Summary of Wipe Samples

Field ID	Lab ID	SDG #	Matrix	Date Sampled	Sample Type	Number of Analyses	Hexavalent Chromium	Total CR	TOC	pH
077BW01-0.0	BZX519	07703	Gauze Pad	23-Mar-98	Building floor	2	1	1		
077BW02-0.0	BZX505	07703	Gauze Pad	23-Mar-98	Building floor	2	1	1		
077BW03-0.0	BZX506	07703	Gauze Pad	23-Mar-98	Building floor	2	1	1		
I004144	87602	07714	Gauze Pad	13-Oct-99	Building floor	2	1	1		
I004145	87606	07714	Gauze Pad	13-Oct-99	Building floor	2	1	1		
I029144	92708	07718	Gauze Pad	13-Dec-99	Building floor	2	1	1		
I029145	92710	07718	Gauze Pad	13-Dec-99	Building floor	2	1	1		
I030144	92707	07718	Gauze Pad	13-Dec-99	Building floor	2	1	1		
I030145	92709	07718	Gauze Pad	13-Dec-99	Building floor	2	1	1		
077BWFB-0.0	BZX507	07703	Gauze Pad	23-Mar-98	Field blank	2	1	1		
F00400I	87605	07714	Gauze Pad	13-Oct-99	Field blank	2	1	1		
					Totals	22	11	11	0	0

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Table 1
Site 077 - Eighth Street #2
Summary of Building Samples

Field ID	Lab ID	SDG #	Matrix	Date Sampled	Sample Type	Number of Analyses	Hexavalent Chromium	Total CR	TOC	pH
077BD02-Top	BZX508	07702	solid	23-Mar-98	Building floor	2	1	1		
077BD02D-Top	BZX509	07702	solid	23-Mar-98	Building floor	2	1	1		
077BD02-Mid	BZX510	07702	solid	23-Mar-98	Building floor	2	1	1		
077BD02-Bot	BZX511	07702	solid	23-Mar-98	Building floor	2	1	1		
077BD03-Top	BZX545	07705	solid	24-Mar-98	Building floor	2	1	1		
077BD03-Mid	BZX546	07705	solid	24-Mar-98	Building floor	2	1	1		
077BD03-Bot	BZX547	07705	solid	24-Mar-98	Building floor	2	1	1		
077BD04-Top	BZX542	07705	solid	24-Mar-98	Building floor	2	1	1		
077BD04-Mid	BZX543	07705	solid	24-Mar-98	Building floor	2	1	1		
077BD04-Bot	BZX544	07705	solid	24-Mar-98	Building floor	2	1	1		
077BD11-0.2-0.25	BZX500	07702	solid	23-Mar-98	Building wall	4	1	1	1	1
077BD11-0.3-0.35	BZX501	07702	solid	23-Mar-98	Building wall	2	1	1		
077BD11-2.9-3.0	BZX502	07702	solid	23-Mar-98	Building wall	2	1	1		
077BD11-3.05-3.10	BZX503	07702	solid	23-Mar-98	Building wall	2	1	1		
077BD12-0.3-0.4	BZX521	07702	solid	24-Mar-98	Building wall	2	1	1		
077BD12-0.4-0.5	BZX520	07702	solid	24-Mar-98	Building wall	2	1	1		
077BD12-3.2-3.3	BZX523	07702	solid	24-Mar-98	Building wall	2	1	1		
077BD12-3.3-3.4	BZX522	07702	solid	24-Mar-98	Building wall	2	1	1		
077BD13-0.2-0.25	BZX512	07702	solid	23-Mar-98	Building wall	2	1	1		
077BD13-0.25-0.30	BZX504	07702	solid	23-Mar-98	Building wall	2	1	1		
077BD13-3.4-3.5	BZX513	07702	solid	23-Mar-98	Building wall	2	1	1		
077BD13-3.5-3.6	BZX514	07702	solid	23-Mar-98	Building wall	2	1	1		
077BD14-0.4-0.5	BZX525	07705	solid	24-Mar-98	Building wall	2	1	1		
077BD14-0.5-0.6	BZX524	07705	solid	24-Mar-98	Building wall	2	1	1		
077BD14-3.1-3.2	BZX527	07705	solid	24-Mar-98	Building wall	2	1	1		
077BD14-3.2-3.3	BZX526	07705	solid	24-Mar-98	Building wall	2	1	1		
077BD15-0.15-0.20	BZX516	07702	solid	23-Mar-98	Building wall	2	1	1		
077BD15-0.25-0.30	BZX515	07702	solid	23-Mar-98	Building wall	2	1	1		
077BD15-3.3-3.4	BZX518	07702	solid	23-Mar-98	Building wall	2	1	1		
077BD15-3.4-3.5	BZX517	07702	solid	23-Mar-98	Building wall	2	1	1		
077BD16-0.4-0.7	BZX529	07705	solid	24-Mar-98	Building wall	2	1	1		

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Table 1

Site 077 - Eighth Street #2

Summary of Building Samples

Field ID	Lab ID	SDG #	Matrix	Date Sampled	Sample Type	Number of Analyses	Hexavalent Chromium	Total CR	TOC	pH
077BD16D-0.4-0.7	BZX530	07705	solid	24-Mar-98	Building wall	2	1	1		
077BD16-0.6-0.7	BZX528	07705	solid	24-Mar-98	Building wall	2	1	1		
077BD16-3.1-3.3	BZX531	07705	solid	24-Mar-98	Building wall	4	1	1	1	1
077BD16-3.2-3.3	BZX532	07705	solid	24-Mar-98	Building wall	2	1	1		
077BD17-0.33-0.4	BZX534	07705	solid	24-Mar-98	Building wall	2	1	1		
077BD17-0.4-0.5	BZX533	07705	solid	24-Mar-98	Building wall	2	1	1		
077BD17-3.1-3.2	BZX538	07706	solid	24-Mar-98	Building wall	4	1	1	1	1
077BD17-3.25-3.3	BZX535	07706	solid	24-Mar-98	Building wall	2	1	1		
077BD17-3.35-3.4	BZX537	07706	solid	24-Mar-98	Building wall	2	1	1		
077BD17D-3.25-3.3	BZX536	07706	solid	24-Mar-98	Building wall	2	1	1		
077BD18-0.3-0.4	BZX548	07706	solid	25-Mar-98	Building wall	2	1	1		
077BD18-0.6-0.7	BZX549	07706	solid	25-Mar-98	Building wall	2	1	1		
077BD18-3.2-3.3	BZX550	07706	solid	25-Mar-98	Building wall	2	1	1		
077BD19-0.4-0.5	BZX553	07706	solid	25-Mar-98	Building wall	2	1	1		
077BD19-0.5-0.55	BZX554	07706	solid	25-Mar-98	Building wall	2	1	1		
077BD19-3.2-3.5	BZX555	07706	solid	25-Mar-98	Building wall	2	1	1		
077BD19-3.3-3.5	BZX556	07706	solid	25-Mar-98	Building wall	2	1	1		
077BD19D-3.3-3.5	BZX557	07706	solid	25-Mar-98	Building wall	2	1	1		
077BD20-0.2-0.3	BZX558	07706	solid	25-Mar-98	Building wall	2	1	1		
077BD20-0.4-0.7	BZX559	07706	solid	25-Mar-98	Building wall	2	1	1		
077BD20-3.0-3.1	BZX561	07706	solid	25-Mar-98	Building wall	2	1	1		
077BD20-3.2-3.3	BZX560	07706	solid	25-Mar-98	Building wall	4	1	1	1	1
077BD21-0.4-0.5	BZX562	07706	solid	25-Mar-98	Building wall	1	1			
077BD23-3.1-3.4	BZX564	07706	solid	25-Mar-98	Building wall	2	1	1		
077BD27-0.4-0.5	BZX552	07706	solid	25-Mar-98	Building wall	2	1	1		
077BD27-0.5-0.6	BZX551	07706	solid	25-Mar-98	Building wall	2	1	1		
C004000	87611	07713	Solid	13-Oct-99	Building floor	2	1	1		
C004004	87612	07713	Solid	13-Oct-99	Building floor	2	1	1		
C004006	87613	07713	Solid	13-Oct-99	Building floor	4	1	1	1	1
C00400D	87616	07713	Solid	13-Oct-99	Building floor	2	1	1		
C009000	87607	07713	Solid	13-Oct-99	Building floor	2	1	1		

Table 1
Site 077 - Eighth Street #2
Summary of Building Samples

Field ID	Lab ID	SDG #	Matrix	Date Sampled	Sample Type	Number of Analyses	Hexavalent Chromium	Total CR	TOC	pH
C009003	87608	07713	Solid	13-Oct-99	Building floor	2	1	1		
C010000	87609	07713	Solid	13-Oct-99	Building floor	2	1	1		
C010006	87610	07713	Solid	13-Oct-99	Building floor	2	1	1		
C021005	92677	07716	Solid	13-Dec-99	Building wall	2	1	1		
C021006	92680	07716	Solid	13-Dec-99	Building wall	2	1	1		
C021030	92681	07716	Solid	13-Dec-99	Building wall	2	1	1		
C021031	92683	07716	Solid	13-Dec-99	Building wall	2	1	1		
C02103D	92682	07716	Solid	13-Dec-99	Building wall	2	1	1		
C023006	92693	07716	Solid	13-Dec-99	Building wall	2	1	1		
C023007	92694	07716	Solid	13-Dec-99	Building wall	2	1	1		
C023031	92696	07716	Solid	13-Dec-99	Building wall	2	1	1		
C023032	92695	07716	Solid	13-Dec-99	Building wall	2	1	1		
C024007	92689	07716	Solid	13-Dec-99	Building wall	2	1	1		
C024008	92690	07716	Solid	13-Dec-99	Building wall	2	1	1		
C024030	92691	07716	Solid	13-Dec-99	Building wall	2	1	1		
C024032	92692	07716	Solid	13-Dec-99	Building wall	2	1	1		
C026007	92685	07716	Solid	13-Dec-99	Building wall	2	1	1		
C026008	92684	07716	Solid	13-Dec-99	Building wall	2	1	1		
C026030	92686	07716	Solid	13-Dec-99	Building wall	2	1	1		
C026032	92687	07716	Solid	13-Dec-99	Building wall	2	1	1		
C028007	92688	07716	Solid	13-Dec-99	Building wall	2	1	1		
C032001	92697	07716	Solid	13-Dec-99	Building floor	2	1	1		
C032004	92698	07716	Solid	13-Dec-99	Building floor	2	1	1		
C032007	92711	07719	Solid	13-Dec-99	Building floor	2	1	1		
C033001	92712	07719	Solid	13-Dec-99	Building floor	2	1	1		
C033004	92713	07719	Solid	13-Dec-99	Building floor	2	1	1		
C033007	92714	07719	Solid	13-Dec-99	Building floor	2	1	1		
C03300D	92715	07719	Solid	13-Dec-99	Building floor	2	1	1		
					Totals	195	93	92	5	5

Table 1
Summary of Soil Samples
Site 077 - Eighth Street #2

Field ID	Lab ID	SDG #	Matrix	Date Sampled	Archives	Number of Analyses	Hexavalent Chromium	Total Cr	TAL Subset	TAL Inorganics	TCL Volatiles	TCL Semi-volatiles	Pest/ PCBs	pH	TOC	TCLP	TPH
S004007	87562	07712	Soil	13-Oct-99		2	1		1								
S004008	87572	07712t	Soil	13-Oct-99		9	1			1	1	1	1	1	1	1	1
S004019	87577	07712	Soil	13-Oct-99		2	1			1						1	
S004026	87563	07712	Soil	13-Oct-99		2	1		1								
S004050	87565	07712	Soil	13-Oct-99		2	1		1								
S004090	87566	07712	Soil	13-Oct-99		2	1		1								
S004100	87567	07712	Soil	13-Oct-99		2	1		1								
S009003	87578	07712	Soil	13-Oct-99		4	1		1					1	1		
S009013	87568	07712	Soil	13-Oct-99		2	1		1								
S009040	87569	07712	Soil	13-Oct-99		2	1		1								
S009070	87570	07712	Soil	13-Oct-99		2	1		1								
S009120	87571	07712	Soil	13-Oct-99		2	1		1								
S010008	87574	07712t	Soil	13-Oct-99		8				1	1	1	1	1	1	1	1
S01000D	87573	07712t	Soil	13-Oct-99		9	1			1	1	1	1	1	1	1	1
S01000D	87590	07712t	Soil	13-Oct-99		1	1										
S01000D	87591	07712t	Soil	13-Oct-99		1	1										
S01000D	87592	07712t	Soil	13-Oct-99		1	1										
S029000	88155	07715	Soil	19-Oct-99		4	1		1					1	1		
S029040	88158	07715	Soil	19-Oct-99		2	1		1								
S029080	88159	07715	Soil	19-Oct-99		2	1		1								
S029100	88160	07715	Soil	19-Oct-99		2	1		1								
S029130	88161	07715	Soil	19-Oct-99		2	1		1								
S030000	88231	07715t	Soil	20-Oct-99		2	1		1								
S03000D	88232	07715t	Soil	20-Oct-99		2	1		1								
S030020	88233	07715t	Soil	20-Oct-99		2	1		1								
S030060	88234	07715t	Soil	20-Oct-99		2	1		1								
S030080	88235	07715t	Soil	20-Oct-99		2	1		1								
S030115	88236	07715t	Soil	20-Oct-99		2	1		1								
S031020	88240	07715t	Soil	20-Oct-99		4	1		1					1	1		
S031040	88237	07715t	Soil	20-Oct-99		2	1		1								

Table 1
Summary of Soil Samples
Site 077 - Eighth Street #2

Field ID	Lab ID	SDG #	Matrix	Date Sampled	Archives	Number of Analyses	Hexavalent Chromium	Total Cr	TAL Subset	TAL Inorganics	TCL Volatiles	TCL Semi-volatiles	Pest/ PCBs	pH	TOC	TCLP	TPH
S031070	88238	07715t	Soil	20-Oct-99		2	1		1								
S031116	88239	07715t	Soil	20-Oct-99		2	1		1								
S032005	92699	07717	Soil	13-Dec-99		2	1		1								
S032008	92702	07717	Soil	13-Dec-99		2	1		1								
S032020	92703	07717	Soil	13-Dec-99		2	1		1								
S033007	92706	07717	Soil	13-Dec-99		3	1							1	1		
S033011	92704	07717	Soil	13-Dec-99		2	1		1								
S033030	92705	07717	Soil	13-Dec-99		2	1		1								
S004036			Soil	13-Oct-99	1												
S029020			Soil	19-Oct-99	1												
S029060			Soil	19-Oct-99	1												
S029090			Soil	19-Oct-99	1												
S029120			Soil	19-Oct-99	1												
S031030			Soil	20-Oct-99	1												
S031050			Soil	20-Oct-99	1												
S031060			Soil	20-Oct-99	1												
S031080			Soil	20-Oct-99	1												
S031100			Soil	20-Oct-99	1												
S030010			Soil	20-Oct-99	1												
T001005	87617	07712	Blank	13-Oct-99		1					1						
				Totals	11	101	37	0	30	4	4	3	3	7	7	4	3

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Table 1
Site 077 - Eighth Street #2
Summary of Groundwater Samples

Field ID	Lab ID	SDG #	Matrix	Date Sampled	Sample Type	Number of Analyses	Hexavalent Chromium	TAL Inorganics	TCL Volatiles	TCL Semi-volatiles	Pest/PCBs	TOC	TS	TSS
G004043	92716	07720	water	13-Dec-99	Monitoring well	6	1	1	1	1	1	1	1	1
G00404F	92724	07720	water	13-Dec-99	Monitoring well	3	1	1				1		
G029037	92721	07720	water	13-Dec-99	Monitoring well	6	1	1	1	1	1	1	1	1
G02903F	92725	07720	water	13-Dec-99	Monitoring well	3	1	1				1		
G030057	92717	07720	water	13-Dec-99	Monitoring well	6	1	1	1	1	1	1	1	1
G03005D	92718	07720	water	13-Dec-99	Monitoring well	6	1	1	1	1	1	1	1	1
G03005F	92728	07720	water	13-Dec-99	Monitoring well	3	1	1				1		
G0300FD	92729	07720	water	13-Dec-99	Monitoring well	3	1	1				1		
G031049	92719	07720	water	13-Dec-99	Monitoring well	6	1	1	1	1	1	1	1	1
G03104F	92730	07720	water	13-Dec-99	Monitoring well	3	1	1				1		
G0010FB	92720	07720	Blank	13-Dec-99	Field blank	6	1	1	1	1	1	1	1	1
G001FBF	92731	07720	Blank	13-Dec-99	Field blank	3	1	1				1		
G0010TB	92732	07720	Blank	13-Dec-99	Trip blank	1			1					
					Totals	55	12	12	7	6	6	12	6	6

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Table 2
Wipe Samples
Site 77 -379 Eighth Street
Analytical Results - Total Chromium and Hexavalent Chromium

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	077BW01	077BW02	077BW03	I004	I004	I029
Sample ID				077BW0100	077BW0200	077BW0300	I004144	I004145	I029144
Lab ID				BZX519	BZX505	BZX506	87602	87606	92708
Date Sampled				3/23/98	3/23/98	3/23/98	10/13/99	10/13/99	12/13/99
Sample Depth (ft)				0-0	0-0	0-0	0-0	0-0	0-0
Units				ug/100cm^2	ug/100cm^2	ug/100cm^2	ug/100cm^2	ug/100cm^2	ug/100cm^2
Chromium			2	19.9 J	61.5 J	42.9 J	8.8	4.1	7.9 J
Chromium, Hexavalent	25	20	2	12.5 UJ	12.5 UJ	12.5 UJ	4.9 UJ	5.1 U	5 UJ

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	I029	I030	I030	077BWFB	Blank
Sample ID				I029145	I030144	I030145	077BWFB-0.0	F004001
Lab ID				92710	92707	92709	BZX507	87605
Date Sampled				12/13/99	12/13/99	12/13/99	3/23/98	10/13/99
Sample Depth (ft)				0-0	0-0	0-0	0-0	0-0
Units				ug/100cm^2	ug/100cm^2	ug/100cm^2	ug/100cm^2	ug/100cm^2
Chromium			2	37 J	12.6 J	15.1 J	1.8 UJ	0.45 J
Chromium, Hexavalent	25	20	2	5 UJ	5 UJ	5 UJ	12.5 UJ	5 U

NOTE:
J = Estimated value
U = Less than the detection limit

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Table 3
Building Floor and Building Wall Samples
Site 77 - Eighth Street #2
Analytical Results - Total Chromium, Hexavalent Chromium, pH and TOC

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	077BD01	077BD01	077BD01	077BD02	077BD02	077BD02
Sample ID				077BD01-Top	077BD01-Mid	077BD01-Bot	077BD02-Top	077BD02D-Top	077BD02-Mid
Lab ID				BZX539	BZX540	BZX541	BZX508	BZX509	BZX510
Date Sampled				3/24/98	3/24/98	3/24/98	3/23/98	3/23/98	3/23/98
Sample Depth (ft)				0-0	0-0	0-0	0-0	0-0	0-0
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chromium, Total			2	15.2 J	18.6 J	18.8 J	14.1 *	16.8 *	16.3 *
Chromium, Hexavalent	25	20	2	4.96 J	5.1 U	5.3	5 U	5.1 U	2.33 J
Chromium,Trivalent	120000			10.24	18.6 J	13.5	14.1 *	16.8 *	13.97
pH				NR	NR	NR	NR	NR	NR
Total Organic Carbon				NR	NR	NR	NR	NR	NR

NOTE:
* = Duplicate analysis is not within limits
J = Estimated value
R = Rejected
U = Less than detection the limit
NR-Not requested for analysis

Table 3
Building Floor and Building Wall Samples
Site 77 - Eighth Street #2
Analytical Results - Total Chromium, Hexavalent Chromium, pH and TOC

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	077BD02	077BD03	077BD03	077BD03	077BD04	077BD04
Sample ID				077BD02-Bot	077BD03-Top	077BD03-Mid	077BD03-Bot	077BD04-Top	077BD04-Mid
Lab ID				BZX511	BZX545	BZX546	BZX547	BZX542	BZX543
Date Sampled				3/23/98	3/24/98	3/24/98	3/24/98	3/24/98	3/24/98
Sample Depth (ft)				0-0	0-0	0-0	0-0	0-0	0-0
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chromium, Total			2	19.6 *	16.5 J	20.7 J	30.5 J	18.8 J	46.3 J
Chromium, Hexavalent	25	20	2	2.71 J	5.1 U	4.8 U	5 U	2.53 J	5.5
Chromium,Trivalent	120000			16.89	16.5 J	20.7 J	30.5 J	16.27	40.8
pH				NR	NR	NR	NR	NR	NR
Total Organic Carbon				NR	NR	NR	NR	NR	NR

NOTE:
* = Duplicate analysis is not within limits
J = Estimated value
R = Rejected
U = Less than detection the limit
NR-Not requested for analysis

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Table 3
Building Floor and Building Wall Samples
Site 77 - Eighth Street #2
Analytical Results - Total Chromium, Hexavalent Chromium, pH and TOC

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	077BD04	077BD11	077BD11	077BD11	077BD11
Sample ID				077BD04-Bot	077BD11-0.2-0.25	077BD11-0.3-0.35	077BD11-2.9-3.0	077BD11-3.05-3.10
Lab ID				BZX544	BZX500	BZX501	BZX502	BZX503
Date Sampled				3/24/98	3/23/98	3/23/98	3/23/98	3/23/98
Sample Depth (ft)				0-0	0.2-0.25	0.3-0.35	2.9-3	3.05-3.1
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chromium, Total			2	357	926 *	301 *	48 *	95.3 *
Chromium, Hexavalent	25	20	2	426	548 J	128 J	5.1 U	4.8 U
Chromium,Trivalent	120000			0	378	173	48 *	95.3 *
pH				NR	8.37	NR	NR	NR
Total Organic Carbon				NR	R	NR	NR	NR

NOTE:
* = Duplicate analysis is not within limits
J = Estimated value
R = Rejected
U = Less than detection the limit
NR-Not requested for analysis

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Table 3
Building Floor and Building Wall Samples
Site 77 - Eighth Street #2
Analytical Results - Total Chromium, Hexavalent Chromium, pH and TOC

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	077BD12	077BD12	077BD12	077BD12	077BD13
Sample ID				077BD12-0.3-0.4	077BD12-0.4-0.5	077BD12-3.2-3.3	077BD12-3.3-3.4	077BD13-0.2-0.25
Lab ID				BZX521	BZX520	BZX523	BZX522	BZX512
Date Sampled				3/24/98	3/24/98	3/24/98	3/24/98	3/23/98
Sample Depth (ft)				0.3-0.4	0.4-0.5	3.2-3.3	3.3-3.4	0.2-0.25
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chromium, Total			2	47.7 *	40.9 *	32.7 *	34.2 *	64.7 *
Chromium, Hexavalent	25	20	2	19.2	5.2	5.2	4.9	26.7 J
Chromium,Trivalent	120000			28.5	35.7	27.5	29.3	38
pH				NR	NR	NR	NR	NR
Total Organic Carbon				NR	NR	NR	NR	NR

NOTE:
* = Duplicate analysis is not within limits
J = Estimated value
R = Rejected
U = Less than detection the limit
NR-Not requested for analysis

Table 3
Building Floor and Building Wall Samples
Site 77 - Eighth Street #2
Analytical Results - Total Chromium, Hexavalent Chromium, pH and TOC

Location ID	Residential	Non-		077BD13	077BD13	077BD13	077BD14	077BD14
Sample ID	Direct	Residential	EPA	077BD13-0.25-0.30	077BD13-3.4-3.5	077BD13-3.5-3.6	077BD14-0.4-0.5	077BD14-0.5-0.6
Lab ID	Contact	Direct	Impact to	BZX504	BZX513	BZX514	BZX525	BZX524
Date Sampled	Soil	Contact Soil	Ground	3/23/98	3/23/98	3/23/98	3/24/98	3/24/98
Sample Depth (ft)	Cleanup	Cleanup	Water	0.25-0.3	3.4-3.5	3.5-3.6	0.4-0.5	0.5-0.6
Units	Criteria	Criteria	Criteria	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chromium, Total			2	17.6 *	6.8 *	21.7 *	547 J	416 J
Chromium, Hexavalent	25	20	2	5.2 U	5.2 U	4.7 U	534	386
Chromium,Trivalent	120000			17.6 *	6.8 *	21.7 *	13	30
pH				NR	NR	NR	NR	NR
Total Organic Carbon				NR	NR	NR	NR	NR

NOTE:
* = Duplicate analysis is not within limits
J = Estimated value
R = Rejected
U = Less than detection the limit
NR-Not requested for analysis

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Table 3
Building Floor and Building Wall Samples
Site 77 - Eighth Street #2
Analytical Results - Total Chromium, Hexavalent Chromium, pH and TOC

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	077BD14	077BD14	077BD15	077BD15	077BD15
Sample ID				077BD14-3.1-3.2	077BD14-3.2-3.3	077BD15-0.15-0.20	077BD15-0.25-0.30	077BD15-3.3-3.4
Lab ID				BZX527	BZX526	BZX516	BZX515	BZX518
Date Sampled				3/24/98	3/24/98	3/23/98	3/23/98	3/23/98
Sample Depth (ft)				3.1-3.2	3.2-3.3	0.15-0.2	0.25-0.3	3.3-3.4
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chromium, Total			2	26.1 J	34.5 J	4720 *	3130 *	29.1 *
Chromium, Hexavalent	25	20	2	4.7 U	5 U	4420 J	2940 J	5.1 U
Chromium,Trivalent	120000			26.1 J	34.5 J	300	190	29.1 *
pH				NR	NR	NR	NR	NR
Total Organic Carbon				NR	NR	NR	NR	NR

NOTE:
* = Duplicate analysis is not within limits
J = Estimated value
R = Rejected
U = Less than detection the limit
NR-Not requested for analysis

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Table 3
Building Floor and Building Wall Samples
Site 77 - Eighth Street #2
Analytical Results - Total Chromium, Hexavalent Chromium, pH and TOC

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	077BD15	077BD16	077BD16	077BD16	077BD16
Sample ID				077BD15-3.4-3.5	077BD16-0.4-0.7	077BD16D-0.4-0.7	077BD16-0.6-0.7	077BD16-3.1-3.3
Lab ID				BZX517	BZX529	BZX530	BZX528	BZX531
Date Sampled				3/23/98	3/24/98	3/24/98	3/24/98	3/24/98
Sample Depth (ft)				3.4-3.5	0.4-0.7	0.4-0.7	0.6-0.7	3.1-3.3
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chromium, Total			2	28.4 *	4600 J	4490 J	1320 J	3.3 J
Chromium, Hexavalent	25	20	2	5.1 U	5330	536 U	1520	4.7 U
Chromium,Trivalent	120000			28.4 *	0	4490 J	0	3.3 J
pH				NR	NR	NR	NR	9.37
Total Organic Carbon				NR	NR	NR	NR	R

NOTE:
* = Duplicate analysis is not within limits
J = Estimated value
R = Rejected
U = Less than detection the limit
NR-Not requested for analysis

Table 3
Building Floor and Building Wall Samples
Site 77 - Eighth Street #2
Analytical Results - Total Chromium, Hexavalent Chromium, pH and TOC

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	077BD16	077BD17	077BD17	077BD17	077BD17
Sample ID				077BD16-3.2-3.3	077BD17-0.33-0.4	077BD17-0.4-0.5	077BD17-3.1-3.2	077BD17-3.25-3.3
Lab ID				BZX532	BZX534	BZX533	BZX538	BZX535
Date Sampled				3/24/98	3/24/98	3/24/98	3/24/98	3/24/98
Sample Depth (ft)				3.2-3.3	0.33-0.4	0.4-0.5	3.1-3.2	3.25-3.3
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chromium, Total			2	22.8 J	1010 J	77.4 J	102 J	20 J
Chromium, Hexavalent	25	20	2	5.1 U	972	57.9	5.1 UJ	4.9 UJ
Chromium,Trivalent	120000			22.8 J	38	19.5	102 J	20 J
pH				NR	NR	NR	8.33	NR
Total Organic Carbon				NR	NR	NR	137000	NR

NOTE:
* = Duplicate analysis is not within limits
J = Estimated value
R = Rejected
U = Less than detection the limit
NR-Not requested for analysis

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Table 3
Building Floor and Building Wall Samples
Site 77 - Eighth Street #2
Analytical Results - Total Chromium, Hexavalent Chromium, pH and TOC

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	077BD17	077BD17	077BD18	077BD18	077BD18
Sample ID				077BD17D-3.25-3.3	077BD17-3.35-3.4	077BD18-0.3-0.4	077BD18-0.6-0.7	077BD18-3.2-3.3
Lab ID				BZX536	BZX537	BZX548	BZX549	BZX550
Date Sampled				3/24/98	3/24/98	3/25/98	3/25/98	3/25/98
Sample Depth (ft)				3.25-3.3	3.35-3.4	0.3-0.4	0.6-0.7	3.2-3.3
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chromium, Total			2	33.6 J	81.9 J	3840 J	235 J	145 J
Chromium, Hexavalent	25	20	2	5 UJ	5.1 UJ	3100 J	194 J	5.1 UJ
Chromium,Trivalent	120000			33.6 J	81.9 J	740	41	145 J
pH				NR	NR	NR	NR	NR
Total Organic Carbon				NR	NR	NR	NR	NR

NOTE:
* = Duplicate analysis is not within limits
J = Estimated value
R = Rejected
U = Less than detection the limit
NR-Not requested for analysis

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Table 3
Building Floor and Building Wall Samples
Site 77 - Eighth Street #2
Analytical Results - Total Chromium, Hexavalent Chromium, pH and TOC

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	077BD19	077BD19	077BD19	077BD19	077BD19
Sample ID				077BD19-0.4-0.5	077BD19-0.5-0.55	077BD19-3.2-3.5	077BD19-3.3-3.5	077BD19D-3.3-3.5
Lab ID				BZX553	BZX554	BZX555	BZX556	BZX557
Date Sampled				3/25/98	3/25/98	3/25/98	3/25/98	3/25/98
Sample Depth (ft)				0.4-0.5	0.5-0.55	3.2-3.5	3.3-3.5	3.3-3.5
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chromium, Total			2	50 J	2210 J	14.9 J	15.6 J	18.8 J
Chromium, Hexavalent	25	20	2	564 UJ	46 J	22.8 J	4.9 UJ	4.7 UJ
Chromium,Trivalent	120000			50 J	2164	0	15.6 J	18.8 J
pH				NR	NR	NR	NR	NR
Total Organic Carbon				NR	NR	NR	NR	NR

NOTE:
* = Duplicate analysis is not within limits
J = Estimated value
R = Rejected
U = Less than detection the limit
NR-Not requested for analysis

Table 3
Building Floor and Building Wall Samples
Site 77 - Eighth Street #2
Analytical Results - Total Chromium, Hexavalent Chromium, pH and TOC

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	077BD20	077BD20	077BD20	077BD20	077BD21
Sample ID				077BD20-0.2-0.3	077BD20-0.4-0.7	077BD20-3.0-3.1	077BD20-3.2-3.3	077BD21-0.4-0.5
Lab ID				BZX558	BZX559	BZX561	BZX560	BZX562
Date Sampled				3/25/98	3/25/98	3/25/98	3/25/98	3/25/98
Sample Depth (ft)				0.2-0.3	0.4-0.7	3-3.1	3.2-3.3	0.4-0.5
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chromium, Total			2	5250 J	5560 J	14.6 *	25 J	6.8 *
Chromium, Hexavalent	25	20	2	4140 J	4640 J	5.2 UJ	5 UJ	4.9 UJ
Chromium,Trivalent	120000			1110	920	14.6 *	25 J	6.8 *
pH				NR	NR	NR	8.64	NR
Total Organic Carbon				NR	NR	NR	14200	NR

NOTE:
* = Duplicate analysis is not within limits
J = Estimated value
R = Rejected
U = Less than detection the limit
NR-Not requested for analysis

Table 3
Building Floor and Building Wall Samples
Site 77 - Eighth Street #2
Analytical Results - Total Chromium, Hexavalent Chromium, pH and TOC

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	077BD23	077BD27	077BD27	C004	C004	C004	C004	C009
Sample ID				077BD23-3.1-3.4	077BD27-0.4-0.5	077BD27-0.5-0.6	C004000	C004004	C004006	C00400D	C009000
Lab ID				BZX564	BZX552	BZX551	87611	87612	87613	87616	87607
Date Sampled				3/25/98	3/25/98	3/25/98	10/13/99	10/13/99	10/13/99	10/13/99	10/13/99
Sample Depth (ft)				3.1-3.4	0.4-0.5	0.5-0.6	0-0.1	0.4-0.5	0.6-0.7	0.6-0.7	0-0.1
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chromium, Total			2	55.8 J	11.8 J	22.6 J	35	32.4	1760	1310	34.8
Chromium, Hexavalent	25	20	2	4.7 UJ	4.9 UJ	2.99 J	2 UJ	2 UJ	198 J	110 J	2 UJ
Chromium,Trivalent	120000			55.8 J	11.8 J	19.61	35	32.4	1562	1200	34.8
pH				NR	NR	NR	NR	NR	12.1	NR	NR
Total Organic Carbon				NR	NR	NR	NR	NR	3663	NR	NR

NOTE:
* = Duplicate analysis is not within limits
J = Estimated value
R = Rejected
U = Less than detection the limit
NR-Not requested for analysis

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Table 3
Building Floor and Building Wall Samples
Site 77 - Eighth Street #2
Analytical Results - Total Chromium, Hexavalent Chromium, pH and TOC

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	C009	C010	C010	C021	C021	C021	C021	C021	C023
Sample ID				C009003	C010000	C010006	C021005	C021006	C021030	C02103D	C021031	C023006
Lab ID				87608	87609	87610	92677	92680	92681	92682	92683	92693
Date Sampled				10/13/99	10/13/99	10/13/99	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99
Sample Depth (ft)				0.3-0.35	0-0.1	0.6-0.7	0-0	0-0	0-0	0-0	0-0	0-0
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chromium, Total			2	38.9	57.2	46.2	5.9	6.6	9.5	7.4	4.2	41.5
Chromium, Hexavalent	25	20	2	2 UJ	2 UJ	2 UJ	2 UJ	2 U	2 UJ	2 UJ	2 UJ	2 U
Chromium,Trivalent	120000			38.9	57.2	46.2	5.9	6.6	9.5	7.4	4.2	41.5
pH				NR	NR	NR	NR	NR	NR	NR	NR	NR
Total Organic Carbon				NR	NR	NR	NR	NR	NR	NR	NR	NR

NOTE:
* = Duplicate analysis is not within limits
J = Estimated value
R = Rejected
U = Less than detection the limit
NR-Not requested for analysis

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Table 3
Building Floor and Building Wall Samples
Site 77 - Eighth Street #2
Analytical Results - Total Chromium, Hexavalent Chromium, pH and TOC

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	C023	C023	C023	C024	C024	C024	C024	C026	C026
Sample ID				C023007	C023031	C023032	C024007	C024008	C024030	C024032	C026007	C026008
Lab ID				92694	92696	92695	92689	92690	92691	92692	92685	92684
Date Sampled				12/13/99	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99
Sample Depth (ft)				0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chromium, Total			2	14.8	20.4	10.5	572	8.3	19.7	35.6	45.1	44.5
Chromium, Hexavalent	25	20	2	2 U	2 U	2 U	200 J	2 U	2 U	2 U	2 U	2 UJ
Chromium,Trivalent	120000			14.8	20.4	10.5	372	8.3	19.7	35.6	45.1	44.5
pH				NR	NR	NR	NR	NR	NR	NR	NR	NR
Total Organic Carbon				NR	NR	NR	NR	NR	NR	NR	NR	NR

NOTE:
* = Duplicate analysis is not within limits
J = Estimated value
R = Rejected
U = Less than detection the limit
NR-Not requested for analysis

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Table 3
Building Floor and Building Wall Samples
Site 77 - Eighth Street #2
Analytical Results - Total Chromium, Hexavalent Chromium, pH and TOC

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	C026	C026	C028	C032	C032	C032	C033	C033	C033	C033
Sample ID				C026030	C026032	C028007	C032001	C032004	C032007	C033001	C033004	C033007	C03300D
Lab ID				92686	92687	92688	92697	92698	92711	92712	92713	92714	92715
Date Sampled				12/13/99	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99
Sample Depth (ft)				0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Chromium, Total			2	13	26.7	14.8	19.9	22.8	482 J	27.1 J	17.6 J	19.2 J	18.9 J
Chromium, Hexavalent	25	20	2	2 U	2 U	2 UJ	2.1 U	2.1 U	124 J	2 UJ	2 UJ	2 UJ	2 UJ
Chromium,Trivalent	120000			13	26.7	14.8	19.9	22.8	358	27.1	17.6	19.2	18.9
pH				NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Total Organic Carbon				NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

NOTE:
* = Duplicate analysis is not within limits
J = Estimated value
R = Rejected
U = Less than detection the limit
NR-Not requested for analysis

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Table 4
Building Samples - Rejected Data
Site 77 - Eighth Street #2

Lab ID	Field ID	Date Analyzed	Parameter Name	Result Type	Qual	MDL	Unit	Quantype	Quantlevel	SDG	Line Item Method
BZX500	077BD11002	3/27/98	Total Organic Carbon	130000	R		mg/kg	PQL		07702	TOC
BZX531	077BD16031	4/21/98	Total Organic Carbon	649	R		mg/kg	PQL		07705	TOC

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Table 5
Site 77 - Eighth Street #2
Hexavalent Chromium Matrix Spike Recovery Summary

Building Samples

Sample Delivery Group	Sample ID	Lab ID	Pre-digestion Spike % Recovery	Post Digestion Spike % Recovery	Chromium, Hexavalent (mg/kg)	pH (S.U.)	Total Organic Carbon (mg/kg)
07702	077BD11002	BZX500	195.4	97.6	548	8.37	130000
07705	077BD16031	BZX531	81.2	102.7	<4.7	9.37	568
07706	077BD17-3.1-3.2	BZX538	74.2	115.3	<5.1	8.33	89400
07713	C004006	87613	103.3	NA	198	12.1	3663
07716	C021005	92677	93.4	91.0	NA	NA	NA

Soil Samples

Sample Delivery Group	Sample ID	Lab ID	Pre-digestion Spike % Recovery	Post Digestion Spike % Recovery	Chromium, Hexavalent (mg/kg)	pH (S.U.)	Total Organic Carbon (mg/kg)
07712	S010008	87575	106.3	98.4	64.2	8.15	24889
07715	S029000	88155	93.8	NA	<2	11.35	1075
07717	S033007	92706	95.3	93.7	<2	9.2	4,999

Groundwater Samples

Sample Delivery Group	Sample ID	Lab ID	Pre-digestion Spike % Recovery	Post Digestion Spike % Recovery	Chromium, Hexavalent (mg/L)	pH (S.U.)	Total Organic Carbon (mg/L)
07720	G029037	92721	94.0	91.8	50	NA	74.0

Number samples with a pre-digestion spike recovery of 0% = 0
Number of samples with a pre-digestion spike recovery between 0 and 75% = 1
Number of samples with a pre-digestion spike recovery >75% but <125% = 7
Number of samples with a pre-digestion spike recovery >125% = 1

NOTE: NA - Not Analyzed.

Table6
Sample Location Coordinates
Site 77 - Eighth Street #2

Sample Location	x-coordinate	y-coordinate
077SB01	616520.32	690095.08
077SB02	616535.90	690092.44
077SB03	616543.72	690138.51
077SB04	616531.31	690142.55
077SB05	616525.62	690157.51
077SB06	616542.20	690162.20
077SB07	616546.28	690185.43
077SB08	616528.90	690185.21
077SB09	616533.57	690193.62
077SB10	616548.64	690191.42
077BS29	616579.61	689937.58
077BS30	616532.75	690246.26
077BS31	616579.61	689937.58
077BS32	616543.72	690170.94
077SB33	616530.17	690092.56
MW-01	616531.66	690140.92
MW-02	616579.61	689937.58
MW-03	616600.99	690120.00
MW-04	616532.75	690246.26

Table 7
Soil Samples
Site 77 - Eighth Street #2
Analytical Results - TAL Subset Hex Cr, pH, TOC, and TPH

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	S004	S004	S004	S004	S004	S009	S009	S009
Sample ID				S004007	S004026	S004050	S004090	S004100	S009003	S009013	S009040
Lab ID				87562	87563	87565	87566	87567	87578	87568	87569
Date Sampled				10/13/99	10/13/99	10/13/99	10/13/99	10/13/99	10/13/99	10/13/99	10/13/99
Sample Depth (ft)				0.7-0.8	2.6-3.6	5-6	9-10	10-11	0.3-1.3	1.3-2.3	4-5
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	14	340		3.5 B	1.3 U	3 B	1.5 U	1.7 U	9.1 JB	1.1 U	1.6 B
Beryllium	2	2		0.2 U	0.33 J	0.43 J	0.72 J	0.86 J	0.5 J	0.36 J	0.37 J
Cadmium	39	100		0.2 U	0.99 J	0.39 J	0.29 U	0.35 U	0.5 J	0.23 U	0.24 U
Chromium			2	575	57.7	274	14.8	28.8	878	19.6	187
Chromium, Hexavalent	25	20	2	12.6	2.7 UJ	2.8 U	2.9 U	3.5 U	6.76	4.02	9.04
Chromium, Trivalent	120000			562.4	57.7	274	14.8	28.8	871.2	15.6	178
Nickel	250	2400		118	20.5	38.2	11.2 J	14.9	76.4	6.9 J	13.8
Vanadium	370	7100		133	44.9	90.3	33.5	41.7	110	11.9	21.6
pH				NR	NR	NR	NR	NR	8.2	NR	NR
Total Organic Carbon				NR	NR	NR	NR	NR	43301	NR	NR

NOTE:
B = Value is less than the CRDL but greater than the IDL
J = Estimated value
U = Less than the detection limit
NR - Not requested for analysis
N/A-Not applicable since there is no Total Cr data.

Table 7
Soil Samples
Site 77 - Eighth Street #2
Analytical Results - TAL Subset Hex Cr, pH, TOC, and TPH

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	S009	S009	S029	S029	S029	S029	S029	S030	S030	S030
Sample ID				S009070	S009120	S029000	S029040	S029080	S029100	S029130	S030000	S03000D	S030020
Lab ID				87570	87571	88155	88158	88159	88160	88161	88231	88232	88233
Date Sampled				10/13/99	10/13/99	10/19/99	10/19/99	10/19/99	10/19/99	10/19/99	10/20/99	10/20/99	10/20/99
Sample Depth (ft)				7-8	12-13	0-1	4-5	8-9	10-11	13-14	0-1	0-1	2-3
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	14	340		1.5 U	1.3 U	1.8 B	1.3 U	1.3 U	1.7 B	3.3 U	2.3 J	1.9 J	1.5 J
Beryllium	2	2		0.54 J	0.65 J	0.23 U	0.41 J	0.42 J	0.29 U	0.66 U	0.37 J	0.33 J	0.32 J
Cadmium	39	100		0.31 U	0.25 U	6.4	3.6	0.93 J	1.4 J	2.4 J	2.2	1.9	2.5
Chromium			2	109	26.9	23.3	13.5	10.4	9.7	25.2	24.3	17.9	15.6
Chromium, Hexavalent	25	20	2	3.1 U	2.6 UJ	2.3 U	2.6 U	2.8 U	2.9 U	6.6 U	2.5 UJ	2.5 UJ	2.5 U
Chromium, Trivalent	120000			109	26.9	23.3	13.5	10.4	9.7	25.2	24.3	17.9	15.6
Nickel	250	2400		15.4	16.6	15.1	20.1	12.1	10.2 J	22.6 J	30.2	13.9	10.6
Vanadium	370	7100		31.1	31.4	28.9	18	22.6	11.7 J	34.8	27.2	21.2	16.1
pH				NR	NR	11.35	NR	NR	NR	NR	NR	NR	NR
Total Organic Carbon				NR	NR	43301	NR	NR	NR	NR	NR	NR	NR

NOTE:
B = Value is less than the CRDL but greater than the IDL
J = Estimated value
U = Less than the detection limit
NR - Not requested for analysis
N/A-Not applicable since there is no Total Cr data.

Table 7
Soil Samples
Site 77 - Eighth Street #2
Analytical Results - TAL Subset Hex Cr, pH, TOC, and TPH

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	S030	S030	S030	S031	S031	S031	S031	S032	S032
Sample ID				S030060	S030080	S030115	S031020	S031040	S031070	S031116	S032005	S032008
Lab ID				88234	88235	88236	88240	88237	88238	88239	92699	92702
Date Sampled				10/20/99	10/20/99	10/20/99	10/20/99	10/20/99	10/20/99	10/20/99	12/13/99	12/13/99
Sample Depth (ft)				6-7	8-9	11.5-12	2-3	4-5	7-8	11.6-12	0.5-0.6	0.8-1.3
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	14	340		2.5 J	11.7 J	1.2 U	1.3 U	1.2 U	1.3 U	2.5 U	1 U	4.1 J
Beryllium	2	2		0.35 J	0.44 J	0.44 J	0.85 J	0.34 J	0.32 J	0.57 J	0.26 U	0.25 U
Cadmium	39	100		1.1 J	1.5 J	0.54 J	0.87 J	0.62 J	0.58 J	0.73 J	0.26 U	0.25 U
Chromium			2	18.9	14.7	14.6	23.7	10.3	9.1	21.7	2770	3110
Chromium, Hexavalent	25	20	2	2.5 U	2.5 U	2.4 U	2.7 U	2.78	2.6 U	5.2 UJ	134 J	177
Chromium, Trivalent	120000			18.9	14.7	14.6	23.7	7.52	9.1	21.7	2636	2933
Nickel	250	2400		10.9	11.7 B	14	19.1	13.3	12	18.1 B	399	363
Vanadium	370	7100		17.5	20	17.3	37.8	13.3	11.8 B	28.1	547	510
pH				NR	NR	NR	8.3	NR	NR	NR	NR	NR
Total Organic Carbon				NR	NR	NR	3193	NR	NR	NR	NR	NR

NOTE:
B = Value is less than the CRDL but greater than the IDL
J = Estimated value
U = Less than the detection limit
NR - Not requested for analysis
N/A-Not applicable since there is no Total Cr data.

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Table 7
Soil Samples
Site 77 - Eighth Street #2
Analytical Results - TAL Subset Hex Cr, pH, TOC, and TPH

Location ID	Residential	Non-		S032	S033	S033	S033
Sample ID	Direct	Residential	EPA	S032020	S033007	S033011	S033030
Lab ID	Contact	Direct	Impact to	92703	92706	92704	92705
Date Sampled	Soil	Contact Soil	Ground	12/13/99	12/13/99	12/13/99	12/13/99
Sample Depth (ft)	Cleanup	Cleanup	Water	2-3.3	0.7-1.1	1-1.3	3-5
Units	Criteria	Criteria	Criteria	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	14	340		2.1 J	0.8 J	1.9 B	2.7 J
Beryllium	2	2		0.42 J	0.31 J	0.23 U	0.39 J
Cadmium	39	100		3.2	0.2 U	0.23 U	0.72 J
Chromium			2	204	1670	6020	688
Chromium, Hexavalent	25	20	2	2.4 U	2 U	188	42.5 J
Chromium, Trivalent	120000			204	1670	5832	645.5
Nickel	250	2400		18.4	64.7	434	55.9
Vanadium	370	7100		33.9	12.3	753	89.6
pH				NR	9.2	NR	NR
Total Organic Carbon				NR	4999	NR	NR

NOTE:
B = Value is less than the CRDL but greater than the IDL
J = Estimated value
U = Less than the detection limit
NR - Not requested for analysis
N/A-Not applicable since there is no Total Cr data.

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Table 8
Soil Samples
Site 77 - Eighth Street #2
Analytical Results - TAL Inorganics, pH, TOC, and TPH

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	S004	S010	S010	S004
Sample ID				S004008	S010008	S01000D	S004019
Lab ID				87572	87574	87573	87577
Date Sampled				10/13/99	10/13/99	10/13/99	10/13/99
Sample Depth (ft)				0.8-1.9	0.8-1.6	0.8-1.6	1.9-2.6
Units				mg/kg	mg/kg	mg/kg	mg/kg
Aluminum				26500	13900	15000	4990
Antimony	14	340	0.3	31.9	17.5	21.6	1.4
Arsenic	20	20	1	3.6 J	2.2 J	2.9 J	4.8
Barium	700	47000	82	40.5 J	86.6	86.8	175
Beryllium	2	2	3	0.35 J	0.25 U	0.25 U	0.37
Cadmium	39	100	0.4	0.26 U	0.25 U	0.25 U	0.49
Calcium				37800	48700	52900	14600
Chromium			2	4060	2390	2860	126
Chromium, Hexavalent	25	20	2	25.6	57.8	35.2	6.94
Chromium, Trivalent	120000			4034	2332.2	2824.8	119.1
Cobalt				122	112	124	7.5
Copper	600	600		27.9	51.7	62.4	63
Iron				59700	57300	65700	15800
Lead	400	600		104	138	179	290
Magnesium				43800	34800	37800	4240
Manganese				351	366	442	254
Mercury	14	270		0.69	1.3	0.93	NA
Nickel	250	2400	7	456	434	475	19.6
Potassium				368 J	420 J	424 J	1500
Selenium	63	3100	0.3	4.2	4.1	4.8	1.9
Silver	110	4100	2	1 J	0.8 J	0.66 J	0.47
Sodium				6330 J	912 J	970 J	527 J
Thallium	2	2	0.04	8.2 J	7.8 J	8 J	1.5 U
Vanadium	370	7100	300	914	602	648	32.4
Zinc	1500	1500	520	235	305	331	189
Petroleum Hydrocarbons (IR)				422	285	275	NR
pH				9.35	8.15	8	NR
Total Organic Carbon				43234	24889	25950	NR

NOTE:
J = Estimated value
NA - Not analyzed by Chemtech
NR-Not requested for analysis
U = Less than detection limit
S004036 was not analyzed for TAL Inorganics

Table 9
Soil Samples
Site 77 - Eighth Street #2
Analytical Results - TCL Volatiles

Location ID	Residential	Non-	Impact to	S004	S010	S010	T001
Sample ID	Direct	Residential	Ground	S004008	S010008	S01000D	T001005
Lab ID	Contact	Direct	Water	87572	87574	87573	87617
Date Sampled	Soil	Contact Soil	Soil	10/13/99	10/13/99	10/13/99	10/13/99
Sample Depth (ft)	Cleanup	Cleanup	Cleanup	0.8-1.9	0.8-1.6	0.8-1.6	0-0
Units	Criteria	Criteria	Criteria	mg/kg	mg/kg	mg/kg	ug/l
1,1,1-Trichloroethane	210	1000	50	1.6 U	1.5 U	1.5 U	1.2 U
1,1,2,2-Tetrachloroethane	34	70	1	1.6 U	1.5 U	1.5 U	1.2 U
1,1,2-Trichloroethane	22	420	1	1.6 U	1.5 U	1.5 U	1.2 U
1,1-Dichloroethane	570	1000	10	1.6 U	1.5 U	1.5 U	1.2 U
1,1-Dichloroethene	8	150	10	1.6 U	1.5 U	1.5 U	1.2 U
1,2-Dichloroethane	6	24	1	1.6 U	1.5 U	1.5 U	1.2 U
1,2-Dichloroethene (cis)	79	1000	1	1.6 U	1.5 U	1.5 U	1.2 U
1,2-Dichloropropane	10	43		1.6 U	1.5 U	1.5 U	1.2 U
2-Butanone	1000	1000	50	1.6 U	1.5 U	1.5 U	1.2 U
2-Hexanone				1.6 U	1.5 U	1.5 U	1.2 U
4-Methyl-2-Pentanone	1000	1000	50	1.6 U	1.5 U	1.5 U	10 U
Acetone	1000	1000	100	1.6 U	1.5 U	1.5 U	1.2 U
Benzene	3	13	1	1.6 U	0.76 J	1.5 U	1.2 U
Bromodichloromethane	11	46	1	1.6 U	1.5 U	1.5 U	10 U
Bromoform	86	370	1	1.6 U	1.5 U	1.5 U	1.2 U
Bromomethane	79	1000	1	1.6 U	1.5 U	1.5 U	1.2 U
Carbon Disulfide				1.6 U	1.5 U	1.5 U	1.2 U
Carbon Tetrachloride	2	4	1	1.6 U	1.5 U	1.5 U	1.2 U
Chlorobenzene	37	680	1	1.6 U	1.5 U	1.5 U	1.2 U
Chloroethane				1.6 U	1.5 U	1.5 U	1.2 U
Chloroform	19	28	1	1.6 U	1.5 U	1.5 U	1.2 U
cis-1,3-Dichloropropene	4	5	1	1.6 U	1.5 U	1.5 U	10 U
Dibromochloromethane	110	1000	1	1.6 U	1.5 U	1.5 U	1.2 U
Ethylbenzene	1000	1000	100	1.6 U	1.5 U	1.5 U	1.2 U
Methylene Chloride	49	210	1	1.6 U	1.5 U	1.5 U	1.2 U
o-xylene				1.6 U	1.5 U	1.5 U	1.2 U
Styrene	23	97	100	1.6 U	1.5 U	1.5 U	10 U
Tetrachloroethene	4	6	1	1.6 U	1.5 U	1.5 U	1.2 U
Toluene	1000	1000	500	1.6 U	0.41 J	1.5 U	10 U
trans-1,3-Dichloropropene	4	5	1	1.6 U	1.5 U	1.5 U	10 U
Trichloroethene	23	54	1	1.6 U	1.5 U	1.5 U	1.2 U
Vinyl Chloride	2	7	10	1.6 U	1.5 U	1.5 U	1.2 U
Xylene (Total)	410	1000	10	1.6 U	0.38 J	1.5 U	1.2 U

NOTE:
J = Estimated value
U = Less than the detection limit

Table 10
Soil Samples
Site 77 - Eighth Street #2
Analytical Results - TCL Semivolatiles

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	Impact to Ground Water Soil Cleanup Criteria	S004	S010	S010
Sample ID				S004008	S010008	S01000D
Lab ID				87572	87574	87573
Date Sampled				10/13/99	10/13/99	10/13/99
Sample Depth (ft)				0.8-1.9	0.8-1.6	0.8-1.6
Units				mg/kg	mg/kg	mg/kg
1,2,4-Trichlorobenzene	68	1200	100	0.14 J	0.42 U	0.42 U
1,2-Dichlorobenzene	5100	10000	50	0.43 U	0.42 U	0.42 U
1,3-Dichlorobenzene	5100	10000	100	0.43 U	0.42 U	0.42 U
1,4-Dichlorobenzene	570	10000	100	0.091 J	0.42 U	0.42 U
2,2'-oxybis(1-Chloropropane)				0.43 U	0.42 U	0.42 U
2,4,5-Trichlorophenol	5600	10000	50	1 U	1 U	1 U
2,4,6-Trichlorophenol	62	270	10	0.43 U	0.42 U	0.42 U
2,4-Dichlorophenol	170	3100	10	0.43 U	0.42 U	0.42 U
2,4-Dimethylphenol	1100	10000	10	0.43 U	0.42 U	0.42 U
2,4-Dinitrophenol	110	2100	10	1 U	1 U	1 U
2,4-Dinitrotoluene	1	4	10	0.43 U	0.42 U	0.42 U
2,6-Dinitrotoluene	1	4	10	0.43 U	0.42 U	0.42 U
2-Chloronaphthalene				0.43 U	0.42 U	0.42 U
2-Chlorophenol	280	5200	10	0.43 U	0.42 U	0.42 U
2-Methylnaphthalene				0.1 J	0.42 U	0.42 U
2-Methylphenol				0.43 U	0.42 U	0.42 U
2-Nitroaniline				1 U	1 U	1 U
2-Nitrophenol				0.43 U	0.42 U	0.42 U
3,3'-Dichlorobenzidine	2	6	100	0.43 U	0.42 U	0.42 U
3-Nitroaniline				1 U	1 U	1 U
4,6-Dinitro-o-cresol				1 U	1 U	1 U
4-Bromophenyl phenyl ether				0.43 U	0.42 U	0.42 U
4-Chloroaniline	230	4200		0.43 U	0.42 U	0.42 U
4-Chlorophenyl phenyl ether				0.43 U	0.42 U	0.42 U
4-Methylphenol	2800	10000		0.43 U	0.42 U	0.42 U
4-Nitroaniline				1 U	1 U	1 U
4-Nitrophenol				1 U	1 U	1 U
Acenaphthene	3400	10000	100	1.1	0.42 U	0.42 U
Acenaphthylene				1.4	0.42 U	0.42 U
Benzo(a)anthracene	0.9	4	500	4.6	0.12 J	0.086 J
Benzo(a)pyrene	0.66	0.66	100	3.3	0.42 U	0.085 J
Benzo(b)fluoranthene	0.9	4	50	2.5	0.1 J	0.079 J
Benzo(ghi)perylene				1.1	0.059 J	0.42 U
Benzo(k)fluoranthene	0.9	4	500	2.3	0.1 J	0.085 J
bis(2-Chloroethoxy)methane				0.43 U	0.42 U	0.42 U
bis(2-Chloroethyl) ether	0.66	3	10	0.43 U	0.42 U	0.42 U
bis(2-Ethylhexyl)phthalate	49	210	100	0.43 U	0.42 U	0.42 U
Butyl benzyl phthalate	1100	10000	100	0.43 U	0.42 U	0.42 U
Carbazole				0.43 U	0.42 U	0.42 U
Chloromethane	520	1000	10	1.6 U	1.5 U	1.5 U
Chrysene	9	40	500	5.4	0.13 J	0.091 J
Di-n-butyl phthalate	5700	10000	100	0.43 U	0.42 U	0.42 U

Table 10
Soil Samples
Site 77 - Eighth Street #2
Analytical Results - TCL Semivolatiles

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	Impact to Ground Water Soil Cleanup Criteria	S004	S010	S010
Sample ID				S004008	S010008	S01000D
Lab ID				87572	87574	87573
Date Sampled				10/13/99	10/13/99	10/13/99
Sample Depth (ft)				0.8-1.9	0.8-1.6	0.8-1.6
Units				mg/kg	mg/kg	mg/kg
Di-n-octyl phthalate	1100	10000	100	0.43 U	0.42 U	0.42 U
Dibenzo(a,h)anthracene	0.66	0.66	100	0.19 J	0.42 U	0.42 U
Dibenzofuran				0.43 U	0.42 U	0.42 U
Diethyl phthalate	10000	10000	50	0.43 U	0.42 U	0.42 U
Dimethyl phthalate	10000	10000	50	0.43 U	0.42 U	0.42 U
Fluoranthene	2300	10000	100	7.2	0.18 J	0.14 J
Fluorene	2300	10000	100	0.75	0.42 U	0.42 U
Hexachlorobenzene	0.66	2	100	0.43 U	0.42 U	0.42 U
Hexachlorobutadiene	1	21	100	0.43 U	0.42 U	0.42 U
Hexachlorocyclopentadiene	400	7300	100	0.43 U	0.42 U	0.42 U
Hexachloroethane	6	100	100	0.43 U	0.42 U	0.42 U
Indeno(1,2,3-c,d)pyrene	0.9	4	50	1.1	0.42 U	0.42 U
Isophorone	1100	10000	50	0.43 U	0.42 U	0.42 U
N-Nitrosodi-n-propylamine	0.66	0.66	10	0.43 U	0.42 U	0.42 U
N-Nitrosodiphenylamine	140	600	100	0.43 U	0.42 U	0.42 U
Naphthalene	230	4200	100	0.19 J	0.42 U	0.42 U
Nitrobenzene	28	520	10	0.43 U	0.42 U	0.42 U
p-Chloro-m-cresol	10000	10000	100	0.43 U	0.42 U	0.42 U
Pentachlorophenol	6	24	100	1 U	1 U	1 U
Phenanthrene				9.5	0.081 J	0.088 J
Phenol	10000	10000	50	0.43 U	0.42 U	0.42 U
Pyrene	1700	10000	100	11.7	0.19 J	0.19 J

NOTE:
J = Estimated value
U = Less than the detection limit

Table 11
Soil Samples
Site 77 - Eighth Street #2
Analytical Results - Pesticides and PCBs

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	Impact to Ground Water Soil Cleanup Criteria	S004	S010	S010
Sample ID				S004008	S010008	S01000D
Lab ID				87572	87574	87573
Date Sampled				10/13/99	10/13/99	10/13/99
Sample Depth (ft)				0.8-1.9	0.8-1.6	0.8-1.6
Units				mg/kg	mg/kg	mg/kg
4,4'-DDD	3	12	50	R	R	R
4,4'-DDE	2	9	50	R	R	R
4,4'-DDT	2	9	500	R	R	R
Aldrin	0.04	0.17	50	R	R	R
alpha-BHC				R	R	R
alpha-Chlordane				R	R	R
beta-BHC				R	R	R
delta-BHC				R	R	R
Dieldrin	0.042	0.18	50	R	R	R
Endosulfan I				R	R	R
Endosulfan II				R	R	R
Endosulfan Sulfate				R	R	R
Endrin	17	310	50	R	R	R
Endrin Aldehyde				R	R	R
Endrin ketone				R	R	R
Gamma-chlordane				R	R	R
Heptachlor	0.15	0.65	50	R	R	R
Heptachlor epoxide				R	R	R
Lindane	0.52	2.2	50	R	R	R
Methoxychlor	280	5200	50	R	R	R
Toxaphene	0.1	0.2	50	R	R	R
Aroclor 1016				R	R	R
Aroclor 1221				R	R	R
Aroclor 1232				R	R	R
Aroclor 1242				R	R	R
Aroclor 1248				R	R	R
Aroclor 1254				R	R	R
Aroclor 1260				R	R	R

NOTE:
R = Rejected

Table 12
Soil Samples
Site 77 - Eighth Street #2
Analytical Results - Waste Characterization

Location ID	Toxic Characteristic Leaching Procedure	S004	S004	S010	S010
Sample ID		S004008	S004019	S010008	S01000D
Lab ID		87572	87577	87574	87573
Date Sampled		10/13/99	10/13/99	10/13/99	10/13/99
Sample Depth (ft)		0.8-1.9	1.9-2.6	0.8-1.6	0.8-1.6
Units	mg/l	mg/l	mg/l	mg/l	mg/l
Volatiles					
1,1-Dichloroethene	0.7	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	0.5	0.05 U	0.05 U	0.05 U	0.05 U
Benzene	0.5	0.05 U	0.05 U	0.05 U	0.05 U
Carbon Tetrachloride	0.5	0.05 U	0.05 U	0.05 U	0.05 U
Chlorobenzene	100	0.05 U	0.05 U	0.05 U	0.05 U
Chloroform	6	0.05 U	0.05 U	0.05 U	0.05 U
Methoxychlor	10	0.01 U	0.01 U	0.01 U	0.01 U
Tetrachloroethene	0.7	0.05 U	0.05 U	0.05 U	0.05 U
Trichloroethene	0.5	0.05 U	0.05 U	0.05 U	0.05 U
Vinyl Chloride	0.2	0.05 U	0.05 U	0.05 U	0.05 U
Semivolatiles					
1,4-Dichlorobenzene	7.5	0.1 U	0.1 U	0.1 U	0.1 U
2,4,5-Trichlorophenol	400	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trichlorophenol	2	0.1 U	0.1 U	0.1 U	0.1 U
2,4-Dinitrotoluene	0.13	0.1 U	0.1 U	0.1 U	0.1 U
Hexachlorobenzene	0.13	0.1 U	0.1 U	0.1 U	0.1 U
Hexachlorobutadiene	0.5	0.1 U	0.1 U	0.1 U	0.1 U
Hexachloroethane	3	0.1 U	0.1 U	0.1 U	0.1 U
Nitrobenzene	2	0.1 U	0.1 U	0.1 U	0.1 U
Pentachlorophenol	100	0.25 U	0.25 U	0.25 U	0.25 U
Pyridine	5	0.1 U	0.1 U	0.1 U	0.1 U
2-Butanone	200	0.05 U	0.05 U	0.05 U	0.05 U
2-Methylphenol		0.1 U	0.1 U	0.1 U	0.1 U
4-Methylphenol		0.2 U	0.2 U	0.2 U	0.2 U
Herbicides					
2,4,5-TP (SILVEX)	1	0.005 U	0.005 U	0.005 U	0.005 U
2,4-D	10	0.005 U	0.005 U	0.005 U	0.005 U
Pesticides					
alpha-Chlordane	0.03	0.02 U	0.02 U	0.02 U	0.02 U
Endrin	0.02	0.002 U	0.002 U	0.002 U	0.002 U
Heptachlor	0.008	0.001 U	0.001 U	0.001 U	0.001 U
Heptachlor epoxide	0.008	0.001 U	0.001 U	0.001 U	0.001 U
Lindane	0.4	0.001 U	0.001 U	0.001 U	0.001 U
Toxaphene	0.5	0.1 U	0.1 U	0.1 U	0.1 U
Metals					
Arsenic	5	0.000006 U	0.000006 U	0.000006 U	0.000006 U
Barium	100	0.000001 U	0.338	0.019	0.0189

Table 12
Soil Samples
Site 77 - Eighth Street #2
Analytical Results - Waste Characterization

Location ID	Toxic Characteristic Leaching Procedure	S004	S004	S010	S010
Sample ID		S004008	S004019	S010008	S01000D
Lab ID		87572	87577	87574	87573
Date Sampled		10/13/99	10/13/99	10/13/99	10/13/99
Sample Depth (ft)		0.8-1.9	1.9-2.6	0.8-1.6	0.8-1.6
Units	mg/l	mg/l	mg/l	mg/l	mg/l
Cadmium	1	0.000001 U	0.000001 U	0.000001 U	0.000001 U
Chromium	5	0.05	0.05	0.0762	0.893
Lead	5	0.000002 U	0.000002 U	0.000002 U	0.000002 U
Mercury	0.2	0.0000002 U	0.0000002 U	0.0000002 U	0.0000002 U
Selenium	1	0.0108	0.0211	0.0149	0.0174
Silver	5	0.000001 U	0.000001 U	0.000001 U	0.000001 U
Rectivity					
Reactive Cyanide	250	R	R	R	N/A
Reactive Sulfide	500	R	R	R	N/A
Corrosivity		R	R	R	N/A
Ignitability		100 >	100 >	100 >	N/A

NOTE:
R = Rejected
U = Less than the detection limit
> = Greater than
N/A - Not analyzed by Chemtech

Table 13
Soil Samples
Site 77 - Eighth Street #2
Analytical Results - Particle Size

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	S004	S004	S004	S004	S010	S010	S010	S010
Sample ID				S004008	S004008	S004008	S004008	S010008	S010008	S010008	S010008
Lab ID				87572	87587	87588	87589	87574	87593	87594	87595
Date Sampled				10/13/99	10/13/99	10/13/99	10/13/99	10/13/99	10/13/99	10/13/99	10/13/99
Sample Depth (ft)				0.8-1.9	0.8-1.9	0.8-1.9	0.8-1.9	0.8-1.6	0.8-1.6	0.8-1.6	0.8-1.6
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
				Original	Course	Medium	Fine	Original	Course	Medium	Fine
Chromium, Total			2	4060	2570	4040	3620	2390	1590	2820	3640
Chromium, Hexavalent	25	20	2	25.6	147 J	122 J	112 J	57.8 J	56.6 J	68.6 J	64.2 J
Chromium,Trivalent	120000			4034	2423	3918	3508	2332	1533.4	2751	3576

NOTE:
J = Estimated value
NS-Not Supplied by Chemtech
N/A- Not applicable since there is no Total Cr data.

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Table 13
Soil Samples
Site 77 - Eighth Street #2
Analytical Results - Particle Size

Location ID	Residential Direct Contact Soil Cleanup Criteria	Non-Residential Direct Contact Soil Cleanup Criteria	EPA Impact to Ground Water Criteria	S010	S010	S010	S010
Sample ID				S01000D	S01000D	S01000D	S01000D
Lab ID				87573	87590	87591	87592
Date Sampled				10/13/99	10/13/99	10/13/99	10/13/99
Sample Depth (ft)				0.8-1.6	0.8-1.6	0.8-1.6	0.8-1.6
Units				mg/kg	mg/kg	mg/kg	mg/kg
				Original	Course	Medium	Fine
Chromium, Total			2	2860	NS	NS	NS
Chromium, Hexavalent	25	20	2	35.2	62.5	53.1	75.1
Chromium,Trivalent	120000			2825	N/A	N/A	N/A

NOTE:
J = Estimated value
NS-Not Supplied by Chemtech
N/A- Not applicable since there is no Total Cr data.

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Table 14
Groundwater Samples (Filtered and Unfiltered)
Site 77 - Eighth Street #2
Analytical Results - TAL Inorganics, Hexavalent Chromium, TS, TSS and Total Organic Carbon

Location ID	Ground Water Quality Standard	MW01	MW01	MW03	MW03	MW04	MW04	MW04
Sample ID		G004043	G00404F	G029037	G02903F	G030057	G03005D	G03005F
Lab ID		92716	92724	92721	92725	92717	92718	92728
Date Sampled		12/13/99	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99
Units		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Aluminum	200	663	61.4 JB	158 JB	59.2 JB	165 JB	152 JB	56 JB
Antimony	20	4 U	4 U	4 U	4 U	4 U	4 U	4 U
Arsenic	8	6.3 J	6 U	6 U	6 U	6 U	6 U	6 U
Barium	2000	81.3 J	70.1 J	166 J	170 J	153 J	163 J	147 J
Beryllium	20	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	4	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Calcium		76500	79100	102000	112000	143000	152000	143000
Chromium	100	54.1	3.2 J	1 U	1 U	1 U	1 J	1 U
Chromium, Hexavalent		50 U	50 U	50 U	50 U	50 U	50 U	50 U
Cobalt		1.1 J	1 U	1 U	1 U	1 U	1 U	1 U
Copper	1000	21.1 J	22.7 J	24.1 J	30.3	21.7 J	22.6 J	11.7 J
Iron	300	7180	6580	22000	23700	17500	18600	16700
Lead	10	42.4	2 U	20.8 J	2 U	17 J	19.9 J	2 U
Magnesium		9030	9130	18200	20500	19200	20400	18900
Manganese	50	221	218	578	641	1090	1150	1080
Mercury	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	6.2 J	1.3 J	1 U	1 U	1 U	1 U	1 U
Potassium		6790	7040	18900	21400	14100	14900	13900
Selenium	50	4 U	4 U	4 U	4 U	4 U	4 U	4 U
Silver	20	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Sodium	50000	25200	26200	70100	77800	59300	62000	57500
Thallium	10	6 UJ	6 UJ	6 UJ	6 UJ	6 UJ	6 UJ	6 UJ
Vanadium		10.4 J	2 U	2 U	2 U	2 U	2 U	2 U
Zinc	5000	107	71.5	174	81.2	39.5	42.4	19.3 J
Total Organic Carbon		44300	36500	74000	80300	96300	79700	75500
Total Solids		455	NR	455	NR	455	455	NR
Total Suspended Solids		1 U	NR	1 U	NR	1U	1 U	NR

NR - Not requested for analysis
B = Analyte found in associated blank
J = Estimated value
U = Less than detection level

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Table 14
Groundwater Samples (Filtered and Unfiltered)
Site 77 - Eighth Street #2
Analytical Results - TAL Inorganics, Hexavalent Chromium, TS, TSS and Total Organic Carbon

Location ID	Ground Water Quality Standard	MW04	MW02	MW02	G001	G001
Sample ID		G0300FD	G031049	G03104F	G0010FB	G001FBF
Lab ID		92729	92719	92730	92720	92731
Date Sampled		12/13/99	12/13/99	12/13/99	12/13/99	12/13/99
Units		ug/l	ug/l	ug/l	ug/l	ug/l
Aluminum	200	59.8 JB	777	71.6 JB	38.2 B	35.8 B
Antimony	20	4 U	4 U	4 U	4 U	4 U
Arsenic	8	6 U	12.4	10.6	6 U	6 U
Barium	2000	142 J	320	301	1 U	1 U
Beryllium	20	1 U	1 U	1 U	1 U	1 U
Cadmium	4	1 U	1 U	1 U	1 U	1 U
Calcium		137000	89400	86100	12 U	12 U
Chromium	100	1 U	1.9 J	1 U	1 U	1 U
Chromium, Hexavalent		50 U	50 U	50 U	50 UJ	50 U
Cobalt		1 U	1 U	1 U	1 U	1 U
Copper	1000	15 J	21 J	16.8 J	1 U	1 U
Iron	300	16500	25200	21700	34 U	34 U
Lead	10	2 U	2 U	2 U	2 U	2 U
Magnesium		18400	44200	40900	20 U	20 U
Manganese	50	1040	2420	2180	1 U	1 U
Mercury	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	1 U	1.5 J	1 U	1 U	1 U
Potassium		13500	31200	30800	34 U	34 U
Selenium	50	4 U	4 U	4 U	4 U	4 U
Silver	20	2 U	2 U	2 U	2 U	2 U
Sodium	50000	56900	210000	0	66.1 B	26 U
Thallium	10	6 UJ	6 UJ	6 UJ	6 UJ	6 UJ
Vanadium		2 U	2.3 J	2 U	2 U	2 U
Zinc	5000	23.2	34.6	19.2 J	3 U	3 U
Total Organic Carbon		104000	68300	64500	10 U	10 U
Total Solids		NR	455	NR	455	NR
Total Suspended Solids		NR	1 U	NR	1 U	NR

NR - Not requested for analysis
B = Analyte found in associated blank
J = Estimated value
U = Less than detection level

Table 15
Groundwater Samples
Site 77 - Eighth Street #2
Analytical Results - TCL Volatiles

Location ID	Ground	MW01	MW02	MW03	MW04	MW04	G001	G001
Sample ID	Water	G004043	G031049	G029037	G030057	G03005D	G0010TB	G0010FB
Lab ID	Quality	92716	92719	92721	92717	92718	92732	92720
Date Sampled	Standard	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99
Units		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1,1,1-Trichloroethane	30	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	2	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	2	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (cis)	70	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	300	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	700	10 U	8 J	10 U	70	10 U	10 U	10 U
Benzene	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	4	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide		10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	2	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	6	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloromethane	30	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	0.2	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	700	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	100	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	1000	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Table 16
Groundwater Samples
Site 77 - Eighth Street #2
Analytical Results - TCL Semivolatiles

Location ID	Ground Water Quality Standard	MW04	MW03	MW04	MW04	MW02	G001
Sample ID		G004043	G029037	G030057	G03005D	G031049	G0010FB
Lab ID		92716	92721	92717	92718	92719	92720
Date Sampled		12/13/99	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99
Units		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1,2,4-Trichlorobenzene	9	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	600	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	600	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	75	10 U	10 U	10 U	10 U	10 U	10 U
2,2'-Oxybis(1-chloropropane)		10 U	10 U	10 U	10 U	10 U	25 U
2,4,5-Trichlorophenol	700	25 U	25 U	25 U	25 U	25 U	10 U
2,4,6-Trichlorophenol	20	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	20	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	100	10 U	10 U	10 U	10 U	10 U	25 U
2,4-Dinitrophenol	40	25 U	25 U	25 U	25 U	25 U	10 U
2,4-Dinitrotoluene	10	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10	10 U	10 U	10 U	10 U	10 U	10 U
2-Chloronaphthalene		10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	40	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	4.5 J	10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	10 U	10 U	10 U	25 U
2-Nitroaniline		25 U	25 U	25 U	25 U	25 U	10 U
2-Nitrophenol		10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	60	10 U	10 U	10 U	10 U	10 U	25 U
3-Nitroaniline		25 U	25 U	25 U	25 U	25 U	10 U
4,6-Dinitro-o-cresol		25 U	25 U	25 U	25 U	25 U	25 U
4-Bromophenyl phenyl ether		10 U	10 U	10 U	10 U	10 U	25 U
4-Chloroaniline		10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether		10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline		25 U	25 U	25 U	25 U	25 U	10 U
4-Nitrophenol		25 U	25 U	25 U	25 U	25 U	10 U
Acenaphthene	400	10 U	4.7 J	10 U	10 U	10 U	10 U
Acenaphthylene		10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	2000	10 U	1 J	1.4 J	1.2 J	10 U	10 U
Benzo(a)anthracene	10	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	20	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(ghi)perylene		10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	2	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl) ether	10	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	30	1.8 J	1.8 J	1.8 J	1.8 J	1.8 J	10 U
Butyl benzyl phthalate	100	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	20	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butyl phthalate	900	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octyl phthalate	100	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	20	10 U	10 U	10 U	10 U	10 U	10 U

Table 16
Groundwater Samples
Site 77 - Eighth Street #2
Analytical Results - TCL Semivolatiles

Location ID	Ground	MW04	MW03	MW04	MW04	MW02	G001
Sample ID	Water	G004043	G029037	G030057	G03005D	G031049	G0010FB
Lab ID	Quality	92716	92721	92717	92718	92719	92720
Date Sampled	Standard	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99
Units		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Dibenzofuran		10 U	1.5 J	10 U	10 U	10 U	10 U
Diethyl phthalate	5000	1.5 J	1.5 J	1.5 J	1.5 J	1.5 J	10 U
Dimethyl phthalate	7000	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	300	10 U	10 U	1.3 J	10 U	10 U	10 U
Fluorene	300	10 U	2.9 J	10 U	10 U	10 U	10 U
Hexachlorobenzene	10	11 U	11 U	11 U	11 U	11 U	10 U
Hexachlorobutadiene	1	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	50	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	10	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-c,d)pyrene	20	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	100	10 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodi-n-propylamine	20	10 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodiphenylamine	20	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	300	1.2 J	1.2 J	1.2 J	1.2 J	1.2 J	10 U
Nitrobenzene	10	10 U	10 U	10 U	10 U	10 U	10 U
o-xylene		10 U	10 U	10 U	10 U	10 U	10 U
p-Chloro-m-cresol		10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	1	25 U	25 U	25 U	25 U	25 U	10 U
Phenanthrene		10 U	6.4 J	1.4 J	1.2 J	10 U	10 U
Phenol	4000	10 U	10 U	10 U	10 U		10 U
Pyrene	200	10 U	10 U	1.1 J	10 U	10 U	10 U

Table 17
Groundwater Samples
Site 77 - Eighth Street #2
Analytical Results -TCL Pesticides and PCBs

Location ID	Ground Water Quality Standard	MW01	MW03	MW04	MW04	MW02	G001
Sample ID		G004043	G029037	G030057	G03005D	G031049	G0010FB
Lab ID		92716	92721	92717	92718	92719	92720
Date Sampled		12/13/99	12/13/99	12/13/99	12/13/99	12/13/99	12/13/99
Units		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
4,4'-DDD	0.1	0.11 U	0.11 U	0.1 U	0.11 U	0.11 U	0.12 U
4,4'-DDE	0.1	0.11 U	0.11 U	0.1 U	0.11 U	0.11 U	0.12 U
4,4'-DDT	0.1	0.11 U	0.11 U	0.1 U	0.11 U	0.11 U	0.12 U
Aldrin	0.04	0.053 U	0.054 U	0.05 U	0.056 U	0.054 U	0.059 U
alpha-BHC	0.02	0.053 U	0.054 U	0.05 U	0.056 U	0.054 U	0.059 U
alpha-Chlordane		0.053 U	0.054 U	0.05 U	0.056 U	0.054 U	0.059 U
beta-BHC	0.2	0.053 U	0.054 U	0.05 U	0.056 U	0.054 U	0.059 U
Carbazole		10 U	6 J	10 U	10 U	10 U	10 U
delta-BHC		0.053 U	0.054 U	0.05 U	0.056 U	0.054 U	0.059 U
Dieldrin	0.03	0.11 U	0.11 U	0.1 U	0.11 U	0.11 U	0.12 U
Endosulfan II	0.4	0.11 U	0.11 U	0.1 U	0.11 U	0.11 U	0.12 U
Endosulfan Sulfate	0.4	0.11 U	0.11 U	0.1 U	0.11 U	0.11 U	0.12 U
Endrin	2	0.11 U	0.11 U	0.1 U	0.11 U	0.11 U	0.12 U
Endrin Aldehyde		0.11 U	0.11 U	0.1 U	0.11 U	0.11 U	0.12 U
Endrin ketone		0.11 U	0.11 U	0.1 U	0.11 U	0.11 U	0.12 U
Heptachlor	0.4	0.053 U	0.054 U	0.05 U	0.056 U	0.054 U	0.059 U
Heptachlor epoxide	0.2	0.053 U	0.054 U	0.05 U	0.056 U	0.054 U	0.059 U
Methoxychlor	40	0.53 U	0.54 U	0.5 U	0.56 U	0.54 U	0.59 U
Aroclor 1016		1.1 U	1.1 U	1 U	1.1 U	1.1 U	1.2 U
Aroclor 1221		2.1 U	2.2 U	2 U	2.2 U	2.2 U	2.4 U
Aroclor 1232		1.1 U	1.1 U	1 U	1.1 U	1.1 U	1.2 U
Aroclor 1242		1.1 U	1.1 U	1 U	1.1 U	1.1 U	1.2 U
Aroclor 1248		1.1 U	1.1 U	1 U	1.1 U	1.1 U	1.2 U
Aroclor 1254		1.1 U	1.1 U	1 U	1.1 U	1.1 U	1.2 U
Aroclor 1260		1.1 U	1.1 U	1 U	1.1 U	1.1 U	1.2 U

Note:
J = Estimated value
U = Less than detection limit

Table 18
Site 77 - 379 Eighth Street
Groundwater Samples
Field Water Quality Monitoring Results

Sample Date	Sample Time	Field ID	Analyte	Filtered Unfiltered	Conc.	Units	Comments
12/13/99	2:35	G004043	pH	Unfiltered	6.76	Std	
12/13/99	2:35	G004043	Temp	Unfiltered	17.92	C	
12/13/99	2:35	G004043	Cond.	Unfiltered	394	mS/cm	
12/13/99	2:35	G004043	Salinity	Unfiltered	0.2	ppt	
12/13/99	2:35	G004043	Dissolved Oxygen	Unfiltered	13.5	mg/l	
12/13/99	2:35	G004043	ORP	Unfiltered	-90.63	mV	
12/13/99	15:05	G031049	pH	Unfiltered	6.23	Std	
12/13/99	15:05	G031049	Temp	Unfiltered	16.4	C	
12/13/99	15:05	G031049	Cond.	Unfiltered	923	mS/cm	
12/13/99	14:13	G029037	pH	Unfiltered	6.28	Std	
12/13/99	14:13	G029037	Temp	Unfiltered	15.47	C	
12/13/99	14:13	G029037	Cond.	Unfiltered	728	mS/cm	
12/13/99	15:40	G030057	pH	Unfiltered	6.71	Std	
12/13/99	15:40	G030057	Temp	Unfiltered	15.50	C	
12/13/99	15:40	G030057	Cond.	Unfiltered	711	mS/cm	

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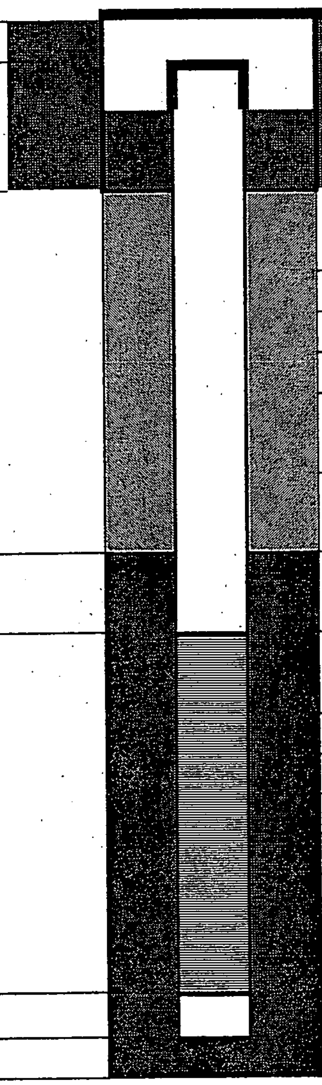
Monitor Well Construction Log

Monitor Well MW-01

Kimball
L. Robert Kimball & Associates

Project: Hudson County Chromate Orphan Group 1	Permit No.: NJ 26 55365
Project No.: 96-1322-1000	Date Begun: 13 OCT 99
Location: Site 077 - 383 Eighth Street, Jersey City, Hudson Co., NJ	Date Finished: 13 OCT 99
Drill Inspector: J. Marhefka	Date Developed: 13 OCT 99
Drill Firm: EPI, Inc.	Driller: M. Pepper
Drill Method: Geoprobe	Helper: N/A
Development Method: Pump & Surge	Depth to Water: 4.39 ft
Survey Elevation: Top of Casing: 6.26 ft AMSL	Top of Riser: 6.02 ft AMSL



Depth	Description	Materials
	Flush Mount Cover	
0.2 ft	Top of Riser Pipe	
	Well Cap	Lockable Plug
1.0 ft	Bottom of Cement Pad	
	ID of Riser Pipe	3/4 Inch
	Type of Riser Pipe	PVC
	Type of Backfill	Portland + 3% Bentonite
	Backfill Emplacement Method	Tremie
	Borehole Diameter	2 inches
2.0 ft	Top of Sand Pack	
3.0 ft	Top of Well Screen	
	ID of Well Screen	3/4 inch
	Type of Well Screen	PVC
	Size of Screen Opening	10-slot
	Size of Filter Sand	1-sand
	Sand Emplacement Method	Tremie
13.0 ft	Bottom of Screen Section	
13.0 ft	Bottom of Well	PVC Bottom Cap
13.0 ft	Bottom of Borehole	

Notes:
a. Well installed in boring SB-04
b. Top of PVC riser casing and top of flush mount cover surveyed by Kimball survey crew.

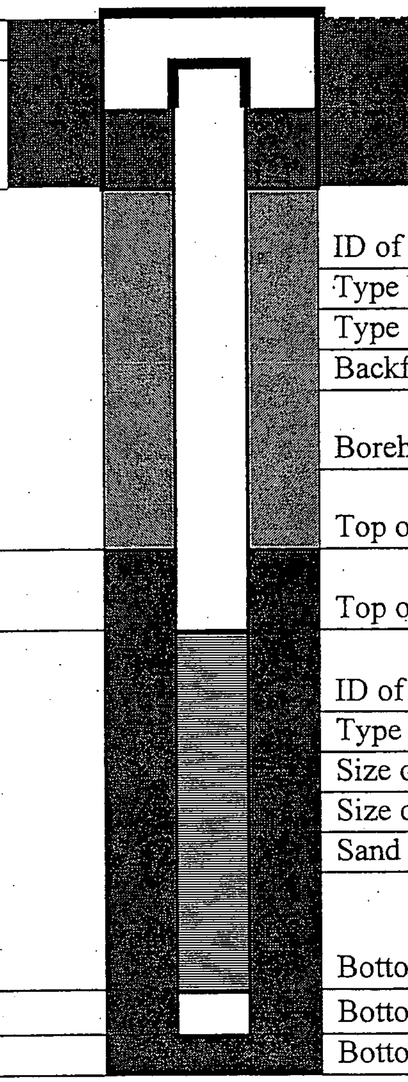
~~96-1000\E\D\SITE086\WELL LOG MW03~~

L. Robert Kimball & Associates

Monitor Well Construction Log

Monitor Well MW-02

Project: Hudson County Chromate Orphan Group 1	Permit No.: NJ 26 55390
Project No.: 96-1322-1000	Date Begun: 20 OCT 99
Location: Site 077 - 383 Eighth Street, Jersey City, Hudson Co., NJ	Date Finished: 20 OCT 99
Drill Inspector: J. Marhefka	Date Developed: 20 OCT 99
Drill Firm: J.C. Anderson Associates	Driller: W. Reeves
Drill Method: Auger	Helper: D. Caldwell
Development Method: Pump & Surge	Depth to Water: 4.94 ft
Survey Elevation: Top of Casing: 7.56 ft AMSL	Top of Riser: 7.05 ft AMSL



Depth	Description	Materials
	Flush Mount Cover	
0.5 ft	Top of Riser Pipe	
	Well Cap	Lockable Plug
1.0 ft	Bottom of Cement Pad	
	ID of Riser Pipe	2 Inch
	Type of Riser Pipe	PVC
	Type of Backfill	Portland + 3% Bentonite
	Backfill Emplacement Method	Tremie
	Borehole Diameter	8 inches
1.0 ft	Top of Sand Pack	
2.0 ft	Top of Well Screen	
	ID of Well Screen	2 inch
	Type of Well Screen	PVC
	Size of Screen Opening	10-slot
	Size of Filter Sand	0-sand
	Sand Emplacement Method	Tremie
12.0 ft	Bottom of Screen Section	
12.0 ft	Bottom of Well	PVC Bottom Cap
12.0 ft	Bottom of Borehole	

Notes:

a. Well installed in boring SB-31

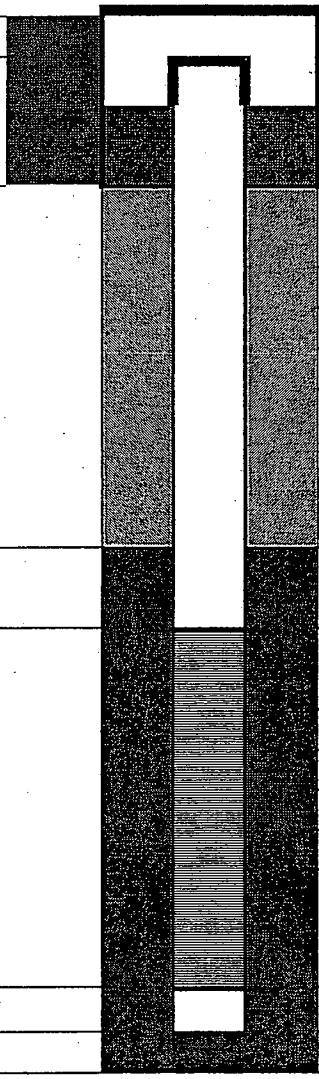
b. Top of PVC riser casing and top of flush mount cover surveyed by Kimball survey crew.

Monitor Well Construction Log

Monitor Well MW-03

Kimball
L. Robert Kimball & Associates

Project: Hudson County Chromate Orphan Group 1	Permit No.: NJ 26 55391
Project No.: 96-1322-1000	Date Begun: 19 OCT 99
Location: Site 077 - 383 Eighth Street, Jersey City, Hudson Co., NJ	Date Finished: 19 OCT 99
Drill Inspector: J. Marhefka	Date Developed: 19 OCT 99
Drill Firm: J.C. Anderson Associates	Driller: W. Reeves
Drill Method: Auger	Helper: D. Caldwell
Development Method: Pump & Surge	Depth to Water: 3.70 ft
Survey Elevation: Top of Casing: 6.09 ft AMSL	Top of Riser: 5.62 ft AMSL



Depth	Description	Materials
	Flush Mount Cover	
0.4 ft	Top of Riser Pipe	
	Well Cap	Lockable Plug
1.0 ft	Bottom of Cement Pad	
	ID of Riser Pipe	2 Inch
	Type of Riser Pipe	PVC
	Type of Backfill	Portland + 3% Bentonite
	Backfill Emplacement Method	Tremie
	Borehole Diameter	8 inches
2.0 ft	Top of Sand Pack	
2.5 ft	Top of Well Screen	
	ID of Well Screen	2 inch
	Type of Well Screen	PVC
	Size of Screen Opening	10-slot
	Size of Filter Sand	0-sand
	Sand Emplacement Method	Tremie
12.5 ft	Bottom of Screen Section	
12.5 ft	Bottom of Well	PVC Bottom Cap
12.5 ft	Bottom of Borehole	

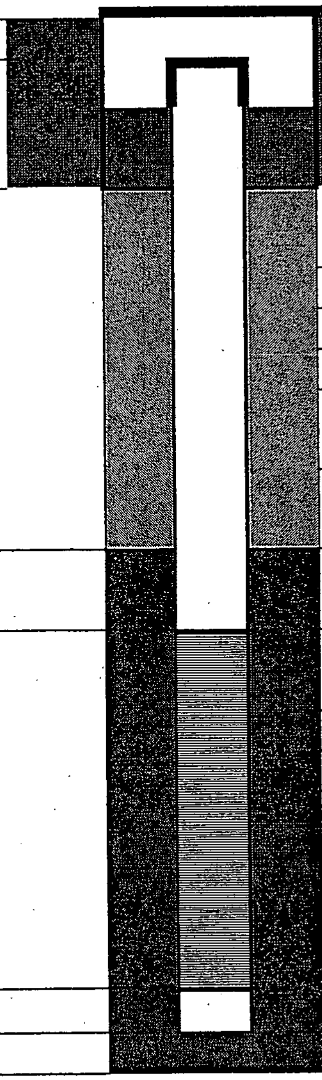
Notes:
a. Well installed in boring SB-29
b. Top of PVC riser casing and top of flush mount cover surveyed by Kimball survey crew.

L. Robert Kimball & Associates

Monitor Well Construction Log

Monitor Well MW-04

Project: Hudson County Chromate Orphan Group 1	Permit No.: NJ 26 55392
Project No.: 96-1322-1000	Date Begun: 20 OCT 99
Location: Site 077 - 383 Eighth Street, Jersey City, Hudson Co., NJ	Date Finished: 20 OCT 99
Drill Inspector: J. Marhefka	Date Developed: 20 OCT 99
Drill Firm: J.C. Anderson Associates	Driller: W. Reeves
Drill Method: Auger	Helper: D. Caldwell
Development Method: Pump & Surge	Depth to Water: 5.76 ft
Survey Elevation: Top of Casing: 7.21 ft AMSL	Top of Riser: 6.76 ft AMSL



Depth	Description	Materials
	Flush Mount Cover	
0.4 ft	Top of Riser Pipe	
	Well Cap	Lockable Plug
1.0 ft	Bottom of Cement Pad	
	ID of Riser Pipe	2 Inch
	Type of Riser Pipe	PVC
	Type of Backfill	Portland + 3% Bentonite
	Backfill Emplacement Method	Tremie
	Borehole Diameter	8 inches
2.0 ft	Top of Sand Pack	
2.5 ft	Top of Well Screen	
	ID of Well Screen	2 inch
	Type of Well Screen	PVC
	Size of Screen Opening	10-slot
	Size of Filter Sand	0-sand
	Sand Emplacement Method	Tremie
12.5 ft	Bottom of Screen Section	
12.5 ft	Bottom of Well	PVC Bottom Cap
12.5 ft	Bottom of Borehole	

Notes:

a. Well installed in boring SB-30

b. Top of PVC riser casing and top of flush mount cover surveyed by Kimball survey crew.

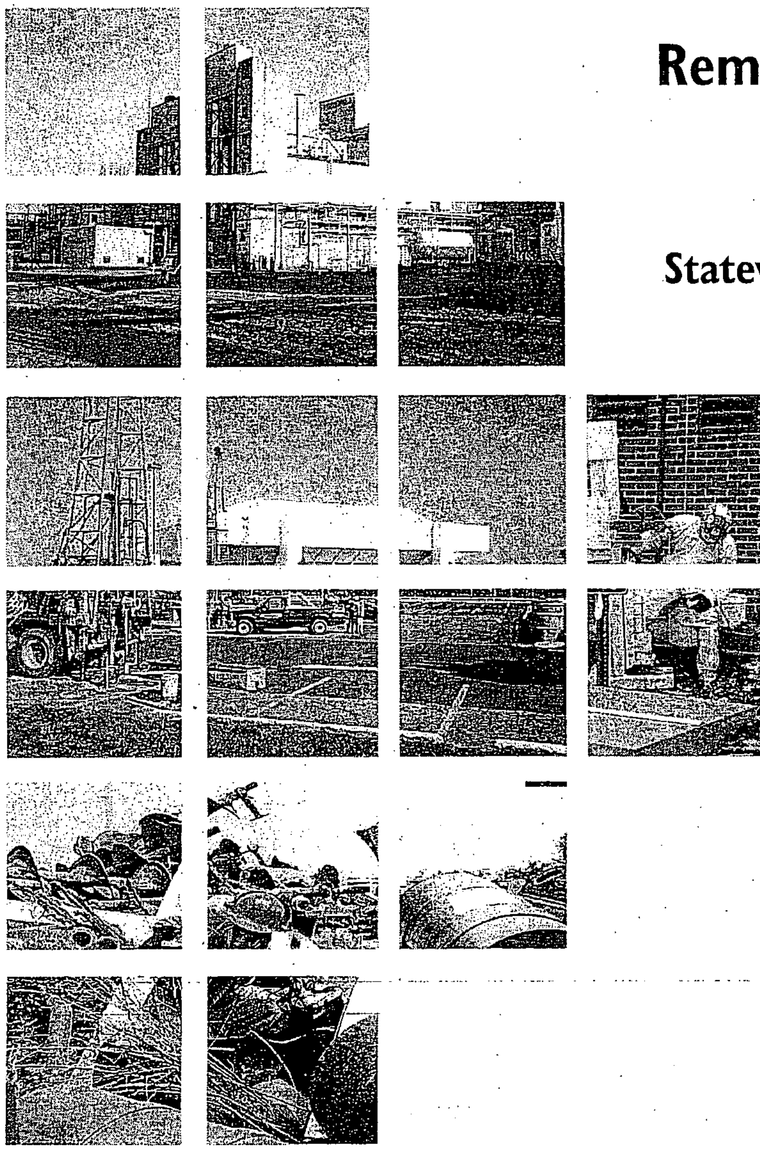
ATTACHMENT U

FINAL REMEDIAL INVESTIGATION REPORT

Hudson County Chromate Orphan Sites Group I:

Site 077 - 8th Street No. 2

Jersey City, New Jersey



Remedial Investigation and Remedial Alternatives Selection Evaluation

Statewide Contract Number A-85149

Submitted to:

STATE OF NEW JERSEY
Department of Environmental Protection
401 East State Street,
Trenton, New Jersey

Submitted by:

The Louis Berger Group, Inc.
30 Vreeland Road
Florham Park, New Jersey 07932

January 2004

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EXECUTIVE SUMMARY

This report provides the results of Remedial Investigation (RI) activities conducted on behalf of the New Jersey Department of Environmental Protection (NJDEP) at Hudson County Chromate Orphan Site 077 – Eighth Street No. 2 (Eighth Street). This includes results of recent Final Site Characterization (FSC) activities conducted by The Louis Berger Group, Inc. (Berger), as well as previous Preliminary Site Characterization (PSC) activities conducted by L. Robert Kimball and Associates (Kimball). The Eighth Street site is located at 383 Eighth Street in the City of Jersey City, Hudson County, New Jersey (Figure 1). This RI report was completed as part of a statewide contract with the NJDEP to perform site-specific Remedial Investigations (RI) and Remedial Action Selection Evaluations (RASE) at multiple sites throughout the state (RI/RASE Term Contract A-85149).

Between 1905 and 1971, three former facilities in Hudson County operated chromite ($FeCrO_4$) ore processing plants. Approximately two million tons of the processing residue, known as chromate waste, is believed to have been placed at 181 known sites in Hudson and Essex Counties, New Jersey. The chromate waste was used as fill in preparation for building foundations, construction of tank berms, roadway construction, filling of wetlands, sewerline construction and other construction and development projects. For 29 of the sites, no responsible party has yet been identified. These sites have, thus, been designated Chromate Orphan Sites and are being investigated by the NJDEP. The Eighth Street site, known as Hudson County Chromate Orphan Site 077, belongs to a series of sites known as Group I.

The Eighth Street site is a 2,500-square foot property, which is owned by Modern Village Development Corporation (MVDC). The property contains a commercial hardware supply warehouse, which occupies almost the entire property (Figure 2). The warehouse was reportedly constructed over chromate waste fill sometime prior to 1961 (Kimball, 1998). Investigation into the nature and extent of chromate waste contamination at Eighth Street began in 1987 and has included air, soil, groundwater and building investigations.

The Kimball PSC field activities were conducted between March 23 and 26, 1998, October 13, 19 and 20, 1999 and December 13, 1999. The soil investigation consisted of the installation of twelve (12) on-site borings and three (3) off-site borings, and the collection and analysis of thirty-six (36) soil samples from those borings. The investigation also included installation of one (1) on-site and three (3) off-site monitoring wells and collection and analysis of groundwater samples. Additionally, nine (9) wipe samples were collected from six (6) locations within the building, and 87 building chip/drill samples were collected from twenty-four (24) locations.

Hexavalent chromium was detected at four (4) soil borings (i.e., 077SB04, 077SB10, 077SB32 and 077SB33) above the most stringent NJDEP Soil Cleanup Criteria (SCC) of 20 mg/kg during PSC activities (Kimball, 2000). Hexavalent chromium concentrations ranged from 25.6 to 188 mg/kg. The exceedance at 077SB10 was located north of the property under the sidewalk at 0.8 to 1.6 feet below ground surface (bgs). The other three were located beneath the on-site warehouse structure at depths ranging from 0.5 to 3.0 feet bgs. The focus of the FSC was to delineate hexavalent chromium contamination at those four (4) borings.

The Eighth Street FSC field effort was conducted by Berger between May 13 and November 8, 2002. All field activities were performed in accordance with the NJDEP-approved *Final Site Characterization Workplan* (Berger, 2001b). The soil investigation included the installation of ten (10) soil borings around the perimeter of the site and collection and analysis of sixty-nine (69) soil samples from those borings. Soil samples were collected continuously from ground surface to native soil at approximately 12 to 18 feet bgs. Discrete chromate waste layers were not observed. However, petroleum staining and volatile organic vapors were present in two (2) of the borings.

The analytical results of the RI showed that hexavalent chromium contamination is limited to the exceedances previously reported by Kimball (2000), which are located beneath concrete. All FSC concentrations of hexavalent chromium were well below the most stringent NJDEP Soil Cleanup Criteria (SCC). Based on horizontal and vertical delineation established from samples collected around the exceedances, the maximum extent of hexavalent chromium contamination is estimated at 445 cubic yards (668 tons). This comprises an area of approximately 2,400 square feet and a depth of 5 feet bgs (Figure 6).

As for the other analytes typically associated with chromate waste (i.e., TAL Subset Metals), only antimony exceeded the most stringent NJDEP SCC at two (2) FSC boring locations. Antimony exceeded the NJDEP Residential Direct Contact Soil Cleanup Criteria (RDCSCC) of 14 mg/kg in two samples from 3 to 12 feet bgs. Trivalent chromium concentrations, which were calculated by subtracting hexavalent chromium from total chromium concentrations, were also well below the most stringent NJDEP SCC for all samples.

The groundwater investigation included the collection and analysis of sixteen (16) groundwater samples from the four (4) existing monitoring wells during two (2) sampling events in October and November 2002. During each round of sampling, one filtered and one unfiltered sample was collected from each monitoring well.

Chromate waste contamination does not appear to have adversely impacted groundwater beneath the site. Hexavalent chromium was not detected above the laboratory method detection limit (MDL) in any of the groundwater samples collected during the RI. Total chromium was not detected above the applicable NJDEP Groundwater Quality Standard (GWQS) of 100 µg/l. The only inorganics that did exceed the GWQS were aluminum, arsenic, iron, manganese and sodium, which are not typically associated with chromate waste. In addition, there was one volatile organic compound, methyl tertiary-butyl ether (MTBE), which was detected above the Interim Groundwater Quality Criteria (IGWQC) at MW-03 during both rounds of sampling.

Based on a Baseline Ecological Evaluation (BEE) conducted from the RI data, cadmium, chromium and nickel are considered potential contaminants of ecological concern (COEC) to the Upper New York Bay/Hudson River. However, since the known contaminants are beneath concrete and above the groundwater table, there are no significant pathways to the Upper New York Bay/Hudson River, which is located almost 2.5 miles away. Therefore, the impact of Eighth Street chromate waste on Upper New York Bay/Hudson River contamination is expected to be insignificant. Additional ecological evaluations are deemed unnecessary for the Eighth Street site.

1.0 INTRODUCTION

This report provides the results of Remedial Investigation (RI) activities conducted on behalf of the New Jersey Department of Environmental Protection (NJDEP) at Hudson County Chromate Orphan Site 077 – Eighth Street No. 2 site (Eighth Street). This includes results of recent Final Site Characterization (FSC) activities conducted by The Louis Berger Group, Inc. (Berger), as well as previous Preliminary Site Characterization (PSC) activities conducted by L. Robert Kimball and Associates (Kimball). Eighth Street is one of 181 known sites in Hudson and Essex Counties where chromate waste processing residue was placed as fill. The site is known as Hudson County Chromate Orphan Site 077, belonging to a series of sites of these sites known as Group I. The Berger effort was completed on behalf of the New Jersey Department of Environmental Protection (NJDEP) as part of a statewide contract to perform Remedial Investigations (RI) and Remedial Action Selection Evaluations (RASE) at multiple sites throughout the state (RI/RASE Term Contract A-85149).

1.1 Purpose and Organization of Report

This RI report, which documents the results of the recent FSC work as well as the previous PSC, is divided into six sections. Section 1.0 includes a detailed introduction of the objective of the investigation, a description of site-specific features and environmental setting, and a listing of documents developed to support the investigation. Section 2.0 provides an overview of site history and previous investigations related to potential chromate waste at the site, including the PSC. Section 3.0 is a discussion of the means and techniques used to conduct the FSC investigation. Section 4.0 contains a summary and analysis of the FSC analytical data and an evaluation of the nature and extent of identified contamination. Section 5.0 provides Berger's conclusions and recommendations for the RI, incorporating the results of both the PSC and FSC. References for the report are presented in Section 6.0.

1.2 Investigation Objectives

The specific objectives of the Remedial Investigation were as follows:

- Determination of the nature and extent of environmental contamination associated with the presence of chromate waste at the site;

- Collection of data necessary to cover the range of potential environmental impacts anticipated for the site; and

- Determination of the physical and chemical characteristics of materials detected on site for use in developing future remedial alternatives, disposal requirements and technical limitations.

1.3 Site Location and Description

The Eighth Street site is located at 383 Eighth Street, Jersey City, Hudson County, New Jersey (40°43'37" north latitude and 74°03'04" west longitude). The site occupies Block 417, Lot 28, as identified on the Jersey City Tax Map (Appendix A). The site is bordered to the north by the Eighth Street right of way. To the east of the site, a warehouse is located at 379-381 Eighth Street, which was formerly known as Hudson County Chromate Orphan Site 076, and which was reportedly removed from the list in 1989. Danny's Towing and Used Cars, an auto repair shop and used car lot, adjoins the site to the west. A warehouse currently occupied by Art Moving Company adjoins the site to the south. Several single-family residential properties are situated to the southeast. Land use at the Eighth Street site and the surrounding areas to the east and south is classified as Low-Density Residential (R-2). The Jersey Avenue Redevelopment Area and the Ninth Street II Redevelopment Area are located to the north of the site. To the west of the site is the New Jersey Turnpike Extension, which is zoned as Automotive, Construction, Office (I-1). The current zoning for the site and surrounding areas is expected to remain as such in the future.

The site is currently owned by Modern Village Development Corporation (MVDC), and is occupied by a commercial hardware supply warehouse. The one-story warehouse is constructed with a concrete slab floor and brick and concrete walls, and occupies almost the entire 2,500-square foot property, except for a concrete sidewalk located between the warehouse and Eighth Street. A site plan showing existing site features is provided as Figure 2.

1.4 Site Soil and Geology

The overburden geology of the Eighth Street site is comprised of fill extending to a depth of approximately 12 to 18 feet bgs and consists primarily of sand, with some silt and gravel, silty sand and gravelly sand. The strata are predominantly grayish-black in color, and contain up to 80% fill material, including ash, slag, brick and glass fragments. Underlying the fill are layers of yellowish brown/grayish olive sand and brownish/olive black peat, which is generally referred to as meadow mat. Based on the USGS (1996) bedrock geologic map, the meadow mat is underlain by the Lockatong and Stockton Formations. These formations are comprised of gray sandstone, siltstone, and limestone (Lockatong) and gray arkose, conglomerates and red shales (Stockton). It is expected that bedrock is approximately 40 feet bgs based on the thickness of glacial sediments in the area (USGS, 1986).

1.5 Site Hydrogeology

The groundwater table at the site is typically present at 3 to 6 feet bgs. Groundwater generally flows locally to the northeast towards the Upper New York Bay/Hudson River, which is located approximately 2.5 miles from the site. Groundwater in the fill and glacial sediment is generally considered to have low hydraulic yields and poor quality. The underlying bedrock formations, however, are aquifers that supply non-potable water to some production wells in the area (Kimball, 1998).

1.6 Topography

As shown on Figure 2, the Eighth Street site is generally flat. The site is located at 6 to 7.5 feet above mean sea level (amsl). The site is predominantly occupied by a one-story warehouse, but also contains a concrete sidewalk between the warehouse and Eighth Street. The warehouse floor is level and lies approximately 1 foot below the finished grade of the sidewalk (Kimball, 2000).

1.7 Surface Drainage Patterns

Precipitation falling on the warehouse at the site is controlled by roof drains and downspouts, which discharge to the municipal storm sewer system. Precipitation falling on the sidewalk flows north into municipal storm sewers located along Eighth Street. Since the site is fully developed, little or no precipitation is expected to infiltrate into the subsurface soils of the site (Kimball, 2000).

1.8 Supporting Documents

Documents prepared in support of the RI for the site include:

Berger (Louis Berger and Associates, Inc.), 1998a. *Programmatic Health and Safety Plan*, Submitted to NJDEP, August 1998.

Berger (Louis Berger and Associates, Inc.), 1998b. *Programmatic Quality Assurance Plan*, Submitted to NJDEP, November 1998.

Berger (The Louis Berger Group, Inc.), 2001a. *Final Site-Specific Health and Safety Plan – Site 077–8th Street No. 2*, Submitted to NJDEP, July 2001.

Berger (The Louis Berger Group, Inc.), 2001b. *Final Site Characterization Workplan, Site 077–8th Street No. 2*, Submitted to NJDEP, October 2001.

Kimball (L. Robert Kimball and Associates, Inc.), 1998. *Final Background Investigation Report, Site 077 – Eighth Street No. 2, Hudson County, New Jersey*, Submitted to NJDEP, January 1998.

Kimball (L. Robert Kimball and Associates, Inc.), 2000. *Draft Preliminary Site Characterization Report with Final Site Characterization Recommendations, Site 077 – Eighth Street No. 2, Hudson County, New Jersey*, Submitted to NJDEP, June 2000.

2.0 BACKGROUND

This section presents background information related primarily to the chromate waste fill at the Eighth Street site. An overview of site history is first presented followed by a discussion of previous investigations and remedial actions at the site.

2.1 Site History

The following discussion of site history is a summary of the Kimball reports (1998, 2000), which include a review of historical aerial photographs, Sanborn fire insurance maps and other historical documentation. The 1885 and 1906 Sanborn maps depict the site and surrounding properties as vacant. By 1938, there was a small shed and a stable located on the western portion of the site. These buildings were razed and the site was reportedly filled with chromate waste, demolition debris, cinders and miscellaneous fill. The current one-story warehouse, which occupies virtually the entire property, has been present at the site since at least 1961, as depicted in a historical aerial photograph.

2.2 Previous Investigations and Remedial Actions

This section presents a summary of the previous investigations and remedial actions that have occurred at the Eighth Street site, as well as revelant work performed at the adjacent Site 076, which include:

- AAC Air Investigation and Foundation Sealing: 1987
- NJDEP Presampling Assessment: 1987-1988
- AESI Subsurface Investigation (Site 076): 1990
- Kimball Preliminary Site Characterization (PSC) Investigation: 1998-1999

AAC Air Quality Monitoring and Foundation Sealing: 1987

In 1987, Aguilar Associates & Consultants, Inc. (AAC) conducted air quality monitoring at the Eighth Street site warehouse and applied sealant to its interior walls (Aguilar, 1987). This was in response to the March 1987 discovery of yellow staining and crystals present on the underside of the concrete flooring slabs being replaced by MVDC. The warehouse was subsequently inspected by the Jersey City Health Division (JCHD), where staining and crystal growth were also observed on the concrete block walls of the warehouse. The JCHD inspector expressed concern about the possibility of chromium in the soil, and requested that employees wear dust masks while working in the warehouse. The JCHD also requested that the crystalline material be removed and a sealing material be sprayed on the walls to prevent further wicking of the contaminants from the subsurface soil. Additionally, the JCHD requested that a sampling and analysis program be developed to determine the presence of chromium within the facility.

The resulting air quality monitoring that occurred at the site in April 1987 showed no detectable concentrations of chromium. The sealant was applied to the interior walls of the warehouse at the Eighth Street site in June 1987.

NJDEP Presampling Assessment: 1987-1988

In 1987, the NJDEP conducted a Presampling Assessment for Site 077 (383 Eighth Street) and Site 076 (379-381 Eighth Street), which were included in the Department's Hudson County Chromium Sampling Project (NJDEP, 1987). The documentation indicates that the entrance to the Site 077 warehouse, which is at the north side of the property off the sidewalk, was likely filled in with suspected chromate waste. This material was discovered as concrete disintegrated at the site. The material was partially excavated and six inches of concrete poured to seal off the area inside the warehouse. The excavated material from Site 077 was stored on the vacant lots at Site 076 in five 55-gallon drums, and was classified as ID-27 and later disposed of off-site. Samples were not collected at either Site 076, since remediation was in progress, or at Site 077, due to inaccessibility. A December 1987 NJDEP photo also documents the presence of yellow crystals along the sides of a sump located within the warehouse at Site 077 (Kimball, 1998). A site plan sketched by the NJDEP in March 1988 also indicates that yellow crystals were noted in the sump. The documentation also indicates that a building was being constructed at Site 076 at the time of the NJDEP investigation (April 1988).

AESI Subsurface Investigation: 1990

As a result of the NJDEP's Phase II chromium study that indicated potential chromium contamination, Accutech Environmental Services, Inc. (AESI) conducted a subsurface investigation at the adjacent Site 076, located at 379-381 Eighth Street, in January 1990. Soil borings were installed to delineate the horizontal and vertical extent of total chromium concentrations to the 75 ppm action limit. Two surface soil samples contained total chromium in excess of the action limit. AESI concluded that the relatively high chromium concentrations detected in the surface soils were possibly related to the removal of soils adjacent to the structure at Site 077 (383 Eighth Street). Soils at Site 077 were reportedly excavated to a depth of 3 feet and a distance of 4 feet from the Site 077 structure, and stockpiled onsite. The face of the cinder block wall was covered with 30-mil polyethylene and concrete was poured into the excavation.

AESI also noted that soils containing low levels of total chromium (2.9 to 32.2 ppm) were in contact with the groundwater at Site 076 (Kimball, 1998).

In a letter dated May 8, 1990, the NJDEP indicated that an April 1990 report prepared by AESI had been reviewed and that the excavation, classification and disposal of residual chromate contaminated soil had met the NJDEP's requirements. Additionally, the installation of the Permalon liner beneath the concrete foundation and adjacent to the footing along the west side of the proposed warehouse at the site would be expected to preclude any future recontamination. Hence, Site 076 was removed from the NJDEP's list of chromate chemical production waste sites.

Kimball Preliminary Site Characterization (PSC) Investigation: 1998-1999

A Preliminary Site Characterization (PSC) investigation was performed by Kimball between March 23, 1998 and December 13, 1999 (Kimball, 2000). This included soil, groundwater, and building investigations as outlined below.

Soil Investigation:

A total of ten (10) borings were initially advanced throughout the site (077SB01 through 077SB10) and samples sent for analysis. However, analytical results were inadvertently lost during reorganization of the laboratory. Thus, Kimball returned to the site and recollected samples from three (3) of the original locations (077SB04, 077SB09, 077SB10), two (2) new locations on site (077SB32, 077SB33), and three (3) additional locations off-site in conjunction with the installation of groundwater monitoring wells (077SB29, 077SB30, 077SB31). The locations of the soil borings are shown in Figure 3, and analytical results are presented in Appendix B–Figures 5, 6, 7, and 8. Samples were collected from approximately one-foot intervals at depths of up to fourteen (14) feet bgs and analyzed for inorganic and organic parameters, particle size distribution, and waste characteristics. A gravel layer of varying thickness was observed to underlie the warehouse's concrete floor. A discrete layer of chromate waste was observed beneath the majority of the warehouse floor and sidewalk slabs at the front of the building. The chromate waste layer varied in thickness from 0.2 feet in soil boring 077SB07 (i.e., in the northern section of the building) to 2.0 feet in borings 077SB01, 077SB02, 077SB04 and 077SB33 beneath the southern section of the building. Chromate waste was not observed as a discrete layer beneath a depth of 3.1 feet. Suspected hexavalent chromium blooms, appearing as yellow crystals and/or yellow green staining, were noted on the underside of the concrete floor or the underlying gravel layer.

Hexavalent chromium was detected in four (4) borings above the most stringent NJDEP SCC for hexavalent chromium of 20 mg/kg, which is the Non-Residential Direct Contact Soil Cleanup Criteria (NRDCSCC). Hexavalent chromium was detected in 077SB04 at a depth of 0.8 to 1.9 feet bgs at a concentration of 25.6 mg/kg; in 077SB10 at a depth of 0.8 to 1.6 feet bgs at concentrations of 35.2 to 57.8 mg/kg; in 077SB32 at depths of 0.5 to 1.3 feet bgs at concentrations of 134 to 177 mg/kg; and in 077SB33 at depths of 1.1 to 3 feet bgs at concentrations of 42.5 to 188 mg/kg.

Other inorganic contaminants detected in the soil samples above the most stringent NJDEP SCC included antimony ranging from 17.5 to 31.9 mg/kg in 077SB04 and 077SB10 at depths of 0.8 to 1.9 feet bgs, in exceedance of the 14 mg/kg SCC. Nickel was detected in exceedance of the 250 mg/kg SCC, ranging from 363 to 475 mg/kg in 077SB04, 077SB10, 077SB32 and 077SB33 at depths of 0.5 to 3 feet bgs. Vanadium was also detected above the 370 mg/kg SCC at 510 to 914 mg/kg in 077SB04, 077SB10, 077SB32 and 077SB33 at depths of 0.5 to 3 feet bgs. Thallium was detected ranging from 7.8 to 8.2 mg/kg, exceeding the 2 mg/kg SCC, in 077SB04 and 077SB10 at depths ranging from 0.8 to 1.9 feet bgs.

Semivolatile organic compounds detected above the NJDEP Residential Direct Contact Soil Cleanup Criteria (RDCSCC) in the soil samples included benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene and indeno(1,2,3-c,d)pyrene. One pesticide, aldrin, was also detected above the RDCSCC.

Groundwater Investigation:

Kimball performed initial groundwater investigation activities at the Eighth Street site from October through December 1999. The groundwater investigation included the installation and sampling of four (4) groundwater monitoring wells (i.e., MW-01, MW-02, MW-03 and MW-04). The locations of the monitoring wells are presented in Figure 2 and analytical results are presented in Appendix B-Figure 9.

Filtered and unfiltered samples of groundwater were collected from the four (4) monitoring wells, as well as a duplicate. Groundwater samples were analyzed for Target Analyte List (TAL) metals, hexavalent chromium, and Target Compound List organic compounds with a library search, TCL pesticides, TCL polychlorinated biphenyls (PCBs), total organic carbon, total solids and total suspended solids. Total chromium was detected in unfiltered samples from two wells, MW-01 and MW-02, at concentrations well below the NJDEP Class IIA Groundwater Quality Standard (GWQS) of 100 μg/L. Hexavalent chromium was not detected above the MDL in any of the samples collected from the monitoring wells. Manganese and iron were detected above the GWQS for all monitoring well samples. Manganese was detected in all four wells at 218 to

2,420 µg/L, in exceedance of its GWQS of 50 µg/L. Iron was also detected in all wells at concentrations ranging from 6,580 µg/L to 25,200 µg/L, which is above its GWQS of 300 µg/L. Aluminum was detected in MW-01 and MW-02 at 663 to 777 µg/L, which is above its GWQS of 200 µg/L. Arsenic was detected in MW-02 at 10.6 to 12.4 µg/L, which is above its GWQS of 8 µg/L. Lead was detected in MW-01, MW-03 and MW-04 at 17 to 42.4 µg/L, exceeding its GWQS of 10 µg/L. Sodium was detected in MW-02, MW-03 and MW-04 at 57,500 to 210,000 µg/L, which is above its GWQS of 50,000 µg/L.

Building Investigation:

Kimball's building investigation included collection of building wipe samples and building chip/drill samples in March 1998, and October and December 1999. Wipe samples were collected from six (6) locations inside the building to document concentrations of hexavalent chromium on the building surfaces prior to and following intrusive sampling activities. Four-inch concrete cores were cut from the building floor slab and sidewalk, and concrete samples were collected from the cores, while chip/drill samples were collected from the walls to determine the amount of chromium that had migrated from the subsurface soils to the floor slab and walls. Samples were collected from a total of twenty-four (24) locations within the building walls, floors and the sidewalk. Samples were analyzed for hexavalent chromium and total chromium. Analytical results are shown in Appendix B–Figure 5.

Kimball noted loose and bubbled paint on the two lower courses of block above the floor slab in the northeastern section of the warehouse. The loose paint was reportedly due to the accumulation of hexavalent chromium crystals beneath the paint. Chromate blooms were not encountered during collection of upper wall samples. Hexavalent chromium blooms were also noted on the bottom of concrete cores cut from the floor during the advancement of borings 077SB04 and 077SB05. The visible hexavalent chromium leaching into the cores was 0.5 to 1.8 inches in thickness.

Hexavalent chromium was not detected above the MDL in any of the wipe samples. Total chromium was detected at concentrations of 19.9 to 61.5 µg/100 cm^2 and 4.1 to 37 µg/100 cm^2 in the samples collected prior to and after intrusive sampling activities, respectively. Hexavalent chromium was detected in wall samples 077BD11, 077BD13 through 077BD20 and 077C004 at heights of 0.15 to 3.5 feet above the floor slab at concentrations of 22.8 to 5,330 mg/kg; and in floor samples 077BD04, 077C024 and 077C032 at concentrations of 124 to 426 mg/kg. Total chromium was detected in all building wall and floor samples at concentrations of 3.3 to 5,560 mg/kg.

3.0 TECHNICAL OVERVIEW

This section presents the technical approach to the second phase of the RI, the Final Site Characterization (FSC), which was conducted between May 13 and November 8, 2002. The primary objective of the FSC was to investigate data gaps identified as part of Preliminary Site Characterization (PSC) work. The primary data gap was delineation of hexavalent chromium exceedances in soil. All on-site sampling and investigation activities were performed in accordance with the supporting documents outlined in Section 1.8, as well as the *New Jersey Technical Requirements for Site Remediation*, (NJDEP, 1999), the *New Jersey Field Sampling Procedures Manual* (NJDEP, 1992a) and, where applicable, other relevant or appropriate USEPA regulation and guidance for conducting investigations at uncontrolled hazardous contamination sites. Implementation of each activity is described below and any deviations from the work plan are noted and explained. The findings of each task are presented in Section 4.0.

3.1 Site Reconnaissance

Based on the site reconnaissance in Summer 2001, the Eighth Street site was observed to contain a one-story warehouse of brick and block construction. There is a concrete sidewalk between the warehouse and Eighth Street.

3.2 Building Inspections

The interior and exterior floors and walls of the adjacent structures to the south (Art Moving Company) and the west (Danny's Towing and Used Cars) were visually inspected for evidence of chromate waste impact, such as hexavalent chromium "blooms" or crystals, discoloration of floors or walls, and loose or bubbled paint.

3.3 Geophysical Investigations

A geophysical survey was performed on May 13 and 20, 2002, prior to drilling, to identify and avoid any underground utilities or other structures at each drilling location. The survey involved the clearing of eleven proposed boring locations via the Ground Penetrating Radar (GPR), Radio-Frequency Utility Locator (RFL) and Electromagnetic Conductivity (EM) methods. The survey was conducted along the sidewalk to the north of the on-site warehouse, to the south in the property occupied by Art Moving Company, and in the adjoining lot to the west (Danny's Towing and Used Cars).

3.4 Soil/Debris/Fill Investigation

A Soil/Debris/Fill investigation was performed at the Eighth Street site to determine the nature and extent of contamination associated with the chromate waste fill encountered at the site during the PSC. The investigation included the installation of ten (10) soil borings around the perimeter of the site and collection and analysis of soil/debris/fill samples from those borings (Table 1). The soil boring locations and survey data are shown in Figure 3 and Table 2, respectively. Soil borings logs generated from the investigation are provided in Appendix C.

The borings (i.e., 77S101-77S103 and 77S105-77S111) were installed using Geoprobe® 2-inch inner diameter macrocores. Soil samples were collected from each one-foot interval continuously throughout the boring until native soils (sand and peat) were encountered. Native soils were typically encountered at 12 to 18 feet bgs. Macrocores were initially advanced four feet over the sample interval and four samples (i.e., one from each foot) were collected from each macrocore when recovery was sufficient. Where recovery was insufficient, an additional Geoprobe® was installed to obtain soil at the depth of interest. Where a discrete change in material occurred in the macrocore, the samples were selected such that they represented the two types of materials.

Lithologic characterization was performed continuously throughout the boring using the Burmister Soil Classification System (Burmister, 1949). The presence of discoloration (e.g., orange, yellow, or green coloring) or nodules (i.e., pebble-like shapes) that might indicate the presence of chromate waste was also noted, if observed, as shown on the boring logs (Appendix C). A 10.2 eV photoionization detector (PID) was used to field-screen the soils for organic vapors.

All soil samples collected were submitted to a New Jersey-certified analytical laboratory, Mitkem Corporation, of Warwick, RI (Certification No. 78001). A total of sixty-nine (69) samples (plus 3 duplicates) were chosen for initial analyses. From each boring, this included a surface sample (e.g., 0 to 1 feet bgs); any samples where chromate was suspected based on visual observation; the soil sample immediately above the water table; and the soil samples immediately above and within the first natural geologic unit. In addition, other samples were chosen such that analyses were performed on one (1) sample every three (3) feet. The samples not initially analyzed were archived for subsequent analysis, if warranted, based on the results of the initial analyses. None of the archived samples were analyzed.

Discrete chromate layers (i.e., a measurable thickness of chromate waste nodules) were not observed at the Eighth Street site. Therefore, the work plan approach that designated laboratory analysis for samples collected above, within, and below any discrete chromate layer was amended with approval by the NJDEP to the above approach.

The samples were analyzed for hexavalent chromium and a subset of the Target Analyte List (TAL) metals that may be associated with the chromate waste fill (i.e., antimony, beryllium, cadmium, chromium, nickel, and vanadium). The analyses were performed using USEPA methods 7196A (NJDEP-modified) and ILM04.1. In addition, due to the petroleum contamination observed at the Eighth Street site, one (1) sample was analyzed for Total Petroleum Hydrocarbons (TPH) via method USEPA 418.1 to obtain representative concentrations for future health and safety planning purposes. Table 1 presents a summary of the samples collected, as well as the associated analyses for each.

Upon completion, the boreholes were immediately grouted with a cement and bentonite mixture to the water table and then backfilled to the surface with soil cuttings.

3.5 Groundwater Investigation

A groundwater investigation was performed at the Eighth Street site to determine whether groundwater has been impacted by chromate waste at the site. The investigation included the collection of filtered and unfiltered groundwater samples from the four (4) existing monitoring wells (i.e., MW-01 through MW-04), and quality control samples, during two groundwater sampling events conducted on October 17-18 and November 7-8, 2002. The monitoring well locations and survey data are shown in Figure 2 and Table 2, respectively.

Groundwater elevation measurements were collected from the monitoring well during each sampling event, and are presented in Table 5. Following this, standing water was purged from each well utilizing low-flow techniques in accordance with *Groundwater Sampling Procedure Low Stress (Low Flow) Purging and Sampling* (USEPA, 1998). The parameters monitored during purging activities included pH, conductivity, temperature, dissolved oxygen content, redox potential and the pumping rate. After well purging and water stabilization requirements were met, filtered and unfiltered groundwater samples were collected from each well. The groundwater field sampling logs are presented in Appendix D.

All groundwater samples collected were submitted to Mitkem Laboratories for analysis. The groundwater samples, duplicates and field blanks were analyzed for hexavalent chromium (USEPA Method 7196A, NJDEP-modified), TAL metals (USEPA Method ILM04.1), TCL Volatile Organic Compounds (VOCs) (unfiltered only), TCL Semivolatile Organic Compounds (SVOCs) (unfiltered only), and TCL pesticides/ polychlorinated biphenyls (PCBs) (USEPA

Method OLM4.2) (unfiltered only), total organic carbon (TOC) (USEPA Region 2/Lloyd Kahn Method), total solids (TS) (USEPA Method 160.3) and total suspended solids (TSS) (USEPA Method 160.2). One trip blank per sampling event was analyzed for TCL VOCs. Table 1 presents a summary of the samples collected as well as the associated analyses for each.

3.6 Sediment Investigation

No surface water or wetlands exist on or immediately adjacent to the site. Therefore, sediment investigations were not performed, pursuant to the *Final Site Characterization Workplan* (Berger, 2001b).

3.7 Surface Water Investigation

No surface water or wetlands exist on or immediately adjacent to the site. Therefore, surface water investigations were not performed, pursuant to the *Final Site Characterization Workplan* (Berger, 2001b).

3.8 Air Monitoring

Air monitoring for volatile organics, particulates and hexavalent chromium was conducted in accordance with the *Programmatic Health and Safety Plan* (Berger, 1998a) and the *Site-Specific Health and Safety Plan* (Berger, 2001a). Air monitoring was conducted within the work zone and at the downwind perimeter of the site during soil sampling. Background readings at the upwind perimeter of the site were also recorded. Other site monitoring included weather conditions, i.e., wind speed and direction, temperature and humidity.

Real-time air monitoring for volatile organics was conducted during sampling using a hand-held combustible gas meter and photoionization detector. Results of air monitoring readings were recorded in the Health and Safety Log Book. Equipment calibration was performed daily and also recorded in the Health and Safety Log Book.

Real-time air monitoring for particulates was conducted during soil sampling using DataRAM Particulate Monitors in the work area as well as at the downwind perimeter of the site. Stored DataRAM readings were downloaded to a personal computer and printed out periodically.

An individual dust sample was collected on the first day of drilling for hexavalent chromium and metals analyses using a high-volume air sampler with microfine dust cartridge. The dust sample was submitted to Clayton Environmental, a subcontractor to Accutest Laboratories, Inc., for analysis.

3.9 Management of Investigation-Derived Wastes

The Geoprobe® drilling method was used to advance the soil borings at the site. This method does not generate any soil cuttings, and the majority of soils collected within the macrocore were placed into the sample jars and submitted to the laboratory for analysis. Any soils not submitted to the laboratory were returned to the boring, which was grouted following sample collection. Additionally, limited quantities of personal protective equipment (PPE) were utilized during the RI due to the nature of the investigative activities. All PPE that was used was rinsed and disposed of as municipal waste. Therefore, investigation-derived waste (IDW) was not generated over the course of the Berger FSC field investigation.

4.0 NATURE AND EXTENT OF CONTAMINATION

This section presents the results of the second phase of the RI, the Final Site Characterization (FSC), as well as an evaluation of the nature and extent of contamination based on the findings. Conclusions and recommendations developed from the findings of the RI, which incorporate results of both the PSC and FSC, are presented in Section 5.0.

4.1 Building Investigations

No evidence of chromate waste impact was observed at the adjacent structures to the south and west of the site.

4.2 Soil/Debris/Fill Investigation

This subsection presents results of the Soil/Debris/Fill Investigation. This includes a presentation and discussion of results of the geophysical survey, the data validation and reliability assessment, and the soil sampling and analysis results.

4.2.1 Results of Geophysical Survey

The results of the geophysical survey are provided in Appendix E, and indicated the presence of a potential utility located beneath the sidewalk at the north of the site immediately adjacent to Eighth Street. No other buried utilities were identified at the remaining proposed boring locations. The results of the geophysical survey were used to identify final soil boring locations, such that there would be no interference with underground utilities or other structures.

4.2.2 Results of Data Validation and Reliability Evaluation

~~A total of seventy-two (72) soil samples, including three (3) duplicates, were analyzed by~~ Mitkem Corporation, of Warwick, RI. Environmental Quality Associates, Inc. (EQA), under contract with the NJDEP, performed the validation of this data that comprised three (3) Sample Delivery Groups (SDGs). The NJDEP then performed a quality assurance review of the data validation reports, the results of which are presented in Appendix F. The raw analytical data and EQA validation reports are stored by the NJDEP in Trenton, NJ.

Reliability of the data was established using the data validation results. The results reported in this RIR contain the qualifiers determined necessary from the results of the data validation. Rejected data were assumed to be unreliable due to analytical or sample matrix problems.

An analysis was performed to determine which duplicate samples and analytes exceeded acceptance criteria. For the TAL Subset Metals, this includes those samples and analytes exceeding the control limit of 20% Relative Percent Difference (RPD), where both the original and duplicate sample concentrations were ≥5 times the Contract Required Detection Limit (CRDL) (NJDEP, 1992b). For the hexavalent chromium data, this includes those samples and analytes exceeding the control limit of 20% RPD, where both the original and duplicate sample concentrations are ≥ 8 mg/kg (NJDEP, 2001). In addition, for those samples where either the original or the duplicate value is less than 8 ppm, samples exceeding the method control limit of 2 ppm are noted (NJDEP, 2001). The following are samples and analytes that exceeded control limits:

ORIGINAL SAMPLE NUMBER	DUPLICATE SAMPLE NUMBER	ANALYTES EXCEEDING CONTROL LIMITS
77S102A	DUP-02	Cr (Total)
77S103G	DUP-03	---
77S108I	DUP-01	Cr (Total)

Hexavalent chromium pre-digestion and post-digestion spike samples were processed for all 3 SDGs. Table 3 presents the pre- and post-digestion spike recoveries. The pre-digestion spikes yielded percent recoveries ranging from 0.0% to 22.75%. All three fell outside of the acceptable limits of 75% to 125%. The post-digestion spikes yielded percent recoveries ranging from 25.6% to 76.0%. All three fell outside of the acceptable limits of 85% to 115%. The results were used by EQA to evaluate the potential for sample matrix interference and its significance to the hexavalent chromium results provided by the laboratory.

4.2.3 Results of Chemical Analyses

The soil analytical results are presented in Table 4 and Figure 4 and are compared to the NJDEP ~~Soil Cleanup Criteria (SCC). A soil contaminant distribution map, which shows the results of~~ the FSC soil investigation in relation to the PSC exceedances is provided as Figure 5. Generalized extents of soil contamination are shown on Figure 6.

The FSC results showed that hexavalent chromium did not exceed the most stringent NJDEP SCC of 20 mg/kg. Hexavalent chromium was detected in 27 of 72 samples at concentrations ranging from 0.95 to 8.8 mg/kg, with an average concentration of 2.84 mg/kg. Based on these results, the extent of hexavalent chromium contamination previously detected is estimated at 445 cubic yards (668 tons), which comprises an area of approximately 2,400 square feet and a depth of 5 feet bgs, as shown on Figure 6.

Concentrations of trivalent chromium, calculated as the difference between hexavalent and total chromium concentrations were also well below the most stringent NJDEP SCC of 120,000 mg/kg.

The only analyte that did exceed the NJDEP SCC was antimony. Concentrations exceeded the RDCSCC but were below the NRDCSCC. As shown on Figure 5, antimony exceeded the RDCSCC of 14 mg/kg at 2 locations from 3 to 12 feet bgs to the north and west of the site, at concentrations ranging from 15.0 to 19.3 mg/kg.

4.2.4 Results of Waste Characterization Analyses

Based on the absence of IDW, waste characterization analyses were not performed pursuant to the *Final Site Characterization Workplan* (Berger, 2001b).

4.3 Groundwater Investigation

This subsection presents results of the Groundwater Investigation. This includes a presentation and discussion of results of the data validation and reliability assessment, and the groundwater sampling and analysis results.

4.3.1 Results of Data Validation and Reliability Evaluation

A total of twenty (20) groundwater samples, including four (4) duplicates, were analyzed by Mitkem Corporation, of Warwick, RI. Environmental Quality Associates, Inc. (EQA), under contract with the NJDEP, performed the validation of this data that comprised two (2) Sample Delivery Groups (SDGs). The NJDEP then performed a quality assurance review of the data validation reports, the results of which are presented in Appendix F. The raw analytical data and EQA validation reports are stored by the NJDEP in Trenton, NJ.
Reliability of the data was established using the data validation results. The results reported in this RIR contain the qualifiers determined necessary from the results of the data validation. Rejected data were assumed to be unreliable due to analytical or sample matrix problems.

Duplicate groundwater samples were collected and analyzed at a rate of five percent. An analysis was performed to determine which duplicate samples and analytes exceeded acceptance criteria. For VOCs, SVOCs and TAL Metals, this includes those samples and analytes exceeding the control limit of 20% Relative Percent Difference (RPD), where both the original and duplicate sample concentrations were ≥5 times the Contract Required Detection Limit (CRDL) (NJDEP, 1992b). For the hexavalent chromium data, this includes those samples and analytes exceeding the control limit of 20% RPD, where both the original and duplicate sample concentrations are ≥ 8 ppm (NJDEP, 2001). In addition, for those samples where either the original or the duplicate value is less than 8 ppm, samples exceeding the method control limit of 2 ppm are noted (NJDEP, 2001). None of the samples and analytes exceeded control limits.

Hexavalent chromium pre-digestion and post-digestion spike samples were processed for both SDGs. Table 3 presents the pre- and post-digestion spike recoveries. The pre-digestion spikes yielded percent recoveries ranging from 0.0% to 22%. All four fell outside of the acceptable limits of 75% to 125%. The post-digestion spikes yielded percent recoveries ranging from 30.0% to 98.0%. Three fell outside of the acceptable limits of 85% to 115%. The results were used by EQA to evaluate the potential for sample matrix interference and its significance to the hexavalent chromium results provided by the laboratory.

4.3.2 Results of Chemical Analyses

The groundwater analytical results are presented in Table 6, with the data compared to the NJDEP Class IIA Groundwater Quality Standards (GWQS) or the Interim Groundwater Quality Criteria (IGWQC). Figures 7 and 8 show the analytical results for analytes typically associated with chromate waste (i.e., TAL Subset Metals) for the October 2002 and November 2002 sampling events, respectively. Also shown on the figures are contours of the groundwater elevation, which show flow to the northeast towards the river. A groundwater contaminant distribution map showing exceedances to the NJDEP GWQS/IGWQC is provided as Figure 9.

The FSC results showed that hexavalent chromium was not detected above the method detection limit (MDL) of 10 µg/l in any of the groundwater samples. Total chromium was not detecetd above the GWQS of 100 µg/l in any of the groundwater samples. With respect to analytes typically associated with chromate waste, there were no exceedances of the NJDEP GWQS/IGWQC.

The only inorganic analytes which did exceed the GWQS/IGWQC include aluminum, arsenic, iron, manganese and sodium. In the first round of sampling, aluminum was detected in MW-02 at a concentration of 557 µg/l, in exceedance of the 200 µg/l GWQS. Arsenic was detected above the 8 µg/l GWQS in MW-02 at 39.4 to 43.9 µg/l. Iron was detected in all four wells (i.e., MW-01 through MW-04) at 4,660 to 38,800 µg/l, exceeding the 300 µg/l GWQS. Manganese was also detected in all four wells at 192 to 4,840 µg/l, in exceedance of the 50 µg/l GWQS. Sodium was detected in MW-02 and MW-04 at concentrations ranging from 159,000 to 669,000 µg/l, which exceeded the 50,000 µg/l GWQS.

During the second groundwater sampling event, arsenic was detected in MW-02 at 31.6 to 35.8 µg/l. Iron was detected in all four wells at 5,910 to 39,100 µg/l. Lead was detected in MW-03 at a concentration of 33.6 µg/l, in exceedance of the 10 µg/l GWQS. Manganese was detected in all wells at 225 to 4,940 µg/l. Sodium was detected in MW-02 and MW-04 at concentrations ranging from 507,000 to 859,000 µg/l.

One volatile organic compound, methyl tertiary-butyl ether (MTBE), was detected in MW-03 at 130 to 150 µg/l during the first sampling event, and in the same well at 140 µg/l during the second sampling event.

4.4 Sediment Investigation

No sediment investigations were scheduled for the FSC as outlined in the *Final Site Characterization Workplan* (Berger, 2001b).

4.5 Surface Water Investigation

No surface water investigations were scheduled for the FSC as outlined in the *Final Site Characterization Workplan* (Berger, 2001b).

4.6 Air Monitoring

Results of real-time air monitoring readings and laboratory analysis of air samples have been submitted to NJDEP Office of Safety and Health (OSSH). Air monitoring readings recorded during sampling work for volatile organics, combustible vapors, and particulates indicate no real-time readings above background conditions.

The results of chromium and metals analyses performed on air samples collected during drilling operations indicate no detectable presence of either hexavalent chromium or metals in work zone air. The OSHA Permissible Exposure Limit (PEL) of 0.1 mg/m^3 was thereby met.

4.7 Baseline Ecological Evaluation

The purpose of this baseline ecological evaluation is to determine if further investigation of chemical contamination is warranted relative to risk to environmentally sensitive areas. In accordance with the *New Jersey Technical Requirements for Site Remediation* (NJDEP, 1999), this evaluation includes the following:

- Identification of contaminants of ecological concern existing on-site,
- Identification of environmentally sensitive areas on or adjacent to the site, and
- Identification of potential migration pathways between sources of contamination and environmentally sensitive areas.

4.7.1 Contaminants of Ecological Concern

Contaminants of ecological concern (COEC) are those site contaminants that exhibit the ability to biomagnify or bioaccumulate, or contaminants with concentrations that exceed applicable standards, criteria or guidelines recommended for use in conducting ecological assessments and investigations (NJDEP, 1999). As stated in Section 3.4, soil samples were analyzed for hexavalent chromium and a subset of the Target Analyte List metals (TAL Subset Metals) that may be associated with the chromate waste fill (i.e., antimony, beryllium, cadmium, chromium, nickel, and vanadium). Based on a review of the Eighth Street soil data, cadmium, chromium and nickel are considered potential COECs.

4.7.2 Determination of Environmentally Sensitive Areas

There are no environmentally sensitive areas at the Eighth Street site, which is located in a fully urbanized area of Jersey City. The site is almost entirely covered by a structure with concrete flooring or a concrete sidewalk (between the on-site warehouse and Eighth Street). The nearest named surface water body, the Upper New York Bay/Hudson River, is located approximately 2.5 miles from the site. According to the National Wetlands Inventory, there are no wetlands located within a 2.5-mile radius of the site. The New Jersey Natural Heritage Program (NJNHP), which contains a database of sensitive environments throughout the state, revealed no records of rare animals, plants or natural communities within the proximity of the Eighth Street site. The Eighth Street site also does not meet the requirements for a "Designated Natural Resource" as defined by N.J.A.C. 7:1E-1.8.

4.7.3 Potential Migratory Pathways

This section describes the potential migration pathways that the site contaminants must follow to reach environmentally sensitive areas on or adjacent to the Eighth Street site. As stated in Section 4.7.2, there are no environmentally sensitive areas on or immediately adjacent to the site. The nearest environmentally sensitive area off-site is the Upper New York Bay/Hudson River, which is located almost 2.5 miles from the site. Since contamination is covered entirely by concrete, pathways for contaminant migration via wind or stormwater erosion, surface runoff or direct contact are very limited. In addition, known contamination is above the groundwater table, so there is little potential for contamination to migrate to groundwater and eventually discharge to the river. This is supported by groundwater data collected during the RI, which showed that this is not readily occurring.

4.7.4 Conclusions

Based on the lack of environmentally sensitive areas at or immediately adjacent to the site, in addition to the limited potential migratory pathways, the likelihood that adverse ecological effects may occur or are occurring is considered insignificant. Thus, no further ecological assessments are warranted.

5.0 CONCLUSIONS

This section presents conclusions for the Eighth Street site based on the findings of the RI, which is comprised of both the PSC and FSC investigations. A discussion is presented for all areas considered as part of the investigation, which include building inspections; investigations of soil/debris/fill, groundwater, sediment, and surface water; and the ecological assessment.

5.1 Building Inspections

Building investigations, which were performed during the PSC, consisted of collection of wipe samples from the walls of the on-site warehouse, and collection of drill cuttings and cores from the walls and floor, and analysis of those samples for hexavalent chromium. Visual examination as well as analytical results indicated that chromium had migrated up the walls of the warehouse and was present beneath the concrete floor slabs. As a result, examination of adjacent structures was recommended for the FSC.

During the FSC, adjacent structures to the south and west of the site were examined for the presence of chromium impacts. No visible indications of chromate waste were observed. It is, thus, recommended that no further investigation of building structures is necessary.

5.2 Soil/Debris/Fill Investigation

Over the course of the RI, one hundred and five (105) soil samples were collected from twenty-five (25) locations across and adjacent to the Eighth Street site. The samples were collected from the upper 12 to 18 feet of soil, which was comprised of fill containing up to 80% fill material (i.e., ash, slag, brick and glass). It was suspected that some of the fill may have contained chromate waste, which is believed to have been placed on site sometime prior to 1961.

Results of the PSC showed the presence of hexavalent chromium contamination on-site beneath the concrete floor of the warehouse structure and beneath the concrete sidewalk at the north of the warehouse. Soil samples from borings 077SB04, 077SB10, 077SB32 and 077SB33 contained hexavalent chromium at 25.6 to 188 mg/kg, exceeding the most stringent NJDEP SCC of 20 mg/kg. The exceedances were located at depths of 0.5 to 3 feet bgs.

The FSC Soil/Debris/Fill Investigation was focused on delineating the PSC hexavalent chromium exceedances. The analytical results showed that hexavalent chromium contamination in the soil is limited to the exceedances identified during the PSC. Based on horizontal and vertical delineation established from samples surrounding the exceedance, the maximum extent of hexavalent chromium contamination is estimated at 445 cubic yards (668 tons). This comprises an area of approximately 2,400 square feet and a depth of 5 feet bgs (Figure 6).

Of the other analytes typically associated with chromate waste (i.e., TAL Subset Metals), only antimony was detected in exceedance of the most stringent NJDEP SCC at two (2) locations to the north and west of the site. Due to the lack of chromium contamination associated with these samples, this analyte is believed to be a result of historic fill. Based on the RI results, no additional soil investigation activities are deemed necessary.

5.3 Groundwater Investigation

The results of the RI indicated that hexavalent chromium was not detected above the MDL in any of the groundwater samples. The only analytes that exceeded the GWQS include aluminum, arsenic, iron, manganese and sodium, which are not typically associated with chromate waste contamination. However, the site is located in a fully urbanized area with historic fill present throughout the region, which may account for the presence of these metals in the groundwater.

5.4 Sediment Investigation

A sediment investigation was not performed during the RI and is not deemed necessary for the future based on the results of the RI and the absence of sediment on or immediately adjacent to the site.

5.5 Surface Water Investigation

A surface water investigation was not performed during the RI and is not deemed necessary for the future based on the results of the RI and the absence of surface waters on or immediately adjacent to the site.

5.6 Ecological Assessment

A Baseline Ecological Evaluation (BEE) showed there appears to be no major ecological concerns associated with site contamination. The nearest environmentally sensitive area is the Hudson River/New York Harbor, located almost 2.5 miles away. Based on the distance of the waterway and the limited potential migratory pathways, impacts from site contamination are expected to be insignificant. Thus, additional ecological evaluations for the site are deemed unnecessary.

6.0 REFERENCES

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Table 1

New Jersey Department of Environmental Protection

Hudson County Chromate Orphan Sites Group I

Site 077 - Eighth Street No. 2

Sample Summary

Matrix	Boring Number	Location/ Sample ID	Lab ID	Depth (ft. bgs)	Analytical Parameters	Sampling Method	Sampling Date
Soil	77S101	77S101A	A0784-17	1.0 - 2.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S101B	A0784-18	2.0 - 3.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S101C	A0784-19	3.0 - 4.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S101D	A0784-20	7.0 - 8.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S101E	A0784-21	9.0 - 10.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		~~77S101H~~	~~A0784-22~~	~~13.0 - 14.0~~	~~Cr^{+6}, TAL Subset Metals~~	~~Grab Sample~~	~~05/17/02~~
		77S101I	A0784-23	14.0 - 15.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S101J	A0784-24	15.0 - 16.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
	77S102	77S102A	A0784-25	1.0 - 2.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		DUP-02	A0784-35	1.0 - 2.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S102B	A0784-26	2.0 - 3.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S102C	A0784-27	3.0 - 4.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S102D	A0784-28	5.0 - 6.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S102E	A0784-29	6.0 - 7.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S102F	A0784-30	7.0 - 8.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S102G	A0784-31	11.0 - 12.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S102I	A0784-32	14.0 - 15.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S102J	A0784-33	15.0 - 16.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
	77S103	77S103A	A0791-17	2.0 - 3.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
		77S103B	A0791-18	3.0 - 4.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
		77S103C	A0791-19	6.0 - 7.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
		77S103D	A0791-20	7.0 - 8.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
		77S103E	A0791-21	11.0 - 12.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
		77S103F	A0791-22	14.0 - 15.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
		77S103G	A0791-23	15.0 - 16.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
		DUP-03	A0791-24	15.0 - 16.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
	77S105	77S105A	A0791-10	3.0 - 4.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
		77S105B	A0791-11	7.0 - 8.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
		77S105C	A0791-12	10.0 - 11.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
		77S105D	A0791-13	11.0 - 12.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
		77S105E	A0791-14	15.0 - 16.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
		77S105F	A0791-15	17.0 - 18.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
		77S105G	A0791-16	18.0 - 19.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02

Note: TAL Subset Metals include antimony, beryllium, cadmium, chromium, nickel, and vanadium

- Not Applicable

Table 1

New Jersey Department of Environmental Protection

Hudson County Chromate Orphan Sites Group I

Site 077 - Eighth Street No. 2

Sample Summary

Matrix	Boring Number	Location/ Sample ID	Lab ID	Depth (ft. bgs)	Analytical Parameters	Sampling Method	Sampling Date
Soil	77S106	77S106A	A0791-01	2.0 - 3.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
		77S106B	A0791-02	3.0 - 4.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
		77S106C	A0791-03	6.0 - 7.0	Cr^{+6}, TAL Subset Metals, TPH	Grab Sample	05/20/02
		77S106D	A0791-04	7.0 - 8.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
		77S106E	A0791-05	14.0 - 15.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
		~~77S106F~~	~~A0791-06~~	~~15.0 - 16.0~~	~~Cr^{+6}, TAL Subset Metals~~	~~Grab Sample~~	~~05/20/02~~
		77S106G	A0791-07	17.0 - 18.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
		77S106H	A0791-08	18.0 - 19.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
		77S106I	A0791-09	19.0 - 20.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/20/02
	77S107	77S107A	A0784-01	1.0 - 2.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S107B	A0784-02	2.0 - 3.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S107C	A0784-03	6.0 - 7.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S107D	A0784-04	7.0 - 8.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S107E	A0784-05	11.0 - 12.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S107F	A0784-06	14.0 - 15.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S107G	A0784-07	15.0 - 16.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S107H	A0784-08	18.0 - 19.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S107I	A0784-09	19.0 - 20.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
	77S108	77S108A	A0784-10	3.0 - 4.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S108B	A0784-11	6.0 - 7.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S108C	A0784-12	7.0 - 8.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S108D	A0784-13	10.0 - 11.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S108F	A0784-14	12.0 - 13.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S108H	A0784-15	14.0 - 15.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		77S108I	A0784-16	15.0 - 16.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/17/02
		DUP - 01	A0784-34	15.0 - 16.0	Cr+6, TAL Subset Metals	Grab Sample	05/17/02
	77S109	77S109A	A0738-01	0.0 - 1.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/13/02
		77S109B	A0738-02	1.0 - 2.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/13/02
		77S109C	A0738-03	2.0 - 3.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/13/02
		77S109D	A0738-04	3.0 - 4.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/13/02

Note: TAL Subset Metals include antimony, beryllium, cadmium, chromium, nickel, and vanadium

NA - Not Applicable

Table 1

New Jersey Department of Environmental Protection

Hudson County Chromate Orphan Sites Group I

Site 077 - Eighth Street No. 2

Sample Summary

Matrix	Boring Number	Location/ Sample ID	Lab ID	Depth (ft. bgs)	Analytical Parameters	Sampling Method	Sampling Date
Soil	77S110	77S110A	A0738-05	0.0 - 1.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/13/02
		77S110B	A0738-06	1.0 - 2.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/13/02
		77S110C	A0738-07	2.0 - 3.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/13/02
		77S110D	A0738-08	3.0 - 4.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/13/02
		77S110E	A0738-09	4.0 - 5.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/13/02
		~~77S110F~~	~~A0738-10~~	~~5.0 - 6.0~~	~~Cr^{+6}, TAL Subset Metals~~	~~Grab Sample~~	~~05/13/02~~
	77S111	77S111A	A0738-11	0.0 - 1.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/13/02
		77S111B	A0738-12	1.0 - 2.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/13/02
		77S111C	A0738-13	2.0 - 3.0	Cr^{+6}, TAL Subset Metals	Grab Sample	05/13/02
Groundwater	MW-01	77MW01	A1518-07	NA	Cr^{+6}, TAL Metals, TCL VOCs, TCL SVOCs, TOC, TS, TSS	Grab Sample	10/18/02
		77MW01F	A1518-08	NA	Cr+6, TAL Metals, TOC, TS, TSS	Grab Sample	10/18/02
		77MW1	A1619-09	NA	Cr^{+6}, TAL Metals, TCL VOCs, TCL SVOCs, TOC, TS, TSS	Grab Sample	11/08/02
		77MW1F	A1619-10	NA	Cr+6, TAL Metals, TOC, TS, TSS	Grab Sample	11/08/02
	MW-02	77MW02	A1518-03	NA	Cr^{+6}, TAL Metals, TCL VOCs, TCL SVOCs, TOC, TS, TSS	Grab Sample	10/17/02
		77MW02F	A1518-04	NA	Cr+6, TAL Metals, TOC, TS, TSS	Grab Sample	10/17/02
		77MW2	A1619-01	NA	Cr^{+6}, TAL Metals, TCL VOCs, TCL SVOCs, TOC, TS, TSS	Grab Sample	11/07/02
		DUPE1	A1619-03	NA	Cr^{+6}, TAL Metals, TCL VOCs, TCL SVOCs, TOC, TS, TSS	Grab Sample	11/07/02
		77MW2F	A1619-02	NA	Cr+6, TAL Metals, TOC, TS, TSS	Grab Sample	11/07/02
		DUPE1F	A1619-04	NA	Cr+6, TAL Metals, TOC, TS, TSS	Grab Sample	11/07/02

Note: TAL Subset Metals include antimony, beryllium, cadmium, chromium, nickel, and vanadium

NA - Not Applicable

Table 1
New Jersey Department of Environmental Protection
Hudson County Chromate Orphan Sites Group I
Site 077 - Eighth Street No. 2
Sample Summary

Matrix	Boring Number	Location/ Sample ID	Lab ID	Depth (ft. bgs)	Analytical Parameters	Sampling Method	Sampling Date
Groundwater	MW-03	77MW03	A1518-09	NA	Cr^{+6}, TAL Metals, TCL VOCs, TCL SVOCs, TOC, TS, TSS	Grab Sample	10/18/02
		DUP-01	A1518-11	NA	Cr^{+6}, TAL Metals, TCL VOCs, TCL SVOCs, TOC, TS, TSS	Grab Sample	10/18/02
		77MW03F	A1518-10	NA	Cr+6, TAL Metals, TOC, TS, TSS	Grab Sample	10/18/02
		DUP-01F	A1518-12	NA	Cr+6, TAL Metals, TOC, TS, TSS	Grab Sample	10/18/02
		77MW3	A1619-11	NA	Cr^{+6}, TAL Metals, TCL VOCs, TCL SVOCs, TOC, TS, TSS	Grab Sample	11/08/02
		77MW3F	A1619-12	NA	Cr+6, TAL Metals, TOC, TS, TSS	Grab Sample	11/08/02
	MW-04	77MW04	A1518-01	NA	Cr^{+6}, TAL Metals, TCL VOCs, TCL SVOCs, TOC, TS, TSS	Grab Sample	10/17/02
		77MW04F	A1518-02	NA	Cr+6, TAL Metals, TOC, TS, TSS	Grab Sample	10/17/02
		77MW4	A1619-05	NA	Cr^{+6}, TAL Metals, TCL VOCs, TCL SVOCs, TOC, TS, TSS	Grab Sample	11/07/02
		77MW4F	A1619-06	NA	Cr+6, TAL Metals, TOC, TS, TSS	Grab Sample	11/07/02

Note: TAL Subset Metals include antimony, beryllium, cadmium, chromium, nickel, and vanadium
NA - Not Applicable

Table 2
New Jersey Department of Environmental Protection
Hudson County Chromate Orphan Sites Group I
Site 077 - Eighth Street No. 2
Sample Location Data

Boring I.D.	Northing (ft)	Easting (ft)	Elevation (ft amsl)
77S101	690199.72	616538.95	6.33
77S102	690193.91	616559.92	6.60
77S103	690178.48	616507.69	6.27
77S105	690130.16	616496.37	5.78
77S106	690113.97	616496.86	5.70
~~77S107~~	~~690079.98~~	~~616508.00~~	~~6.40~~
77S108	690082.39	616523.76	6.14
77S109	690074.34	616539.30	5.29
77S110	690067.32	616561.41	5.05
77S111	690076.62	616570.53	5.01
MW-01	690140.92	616531.66	6.26
MW-02	689937.58	616579.61	7.56
MW-03	690120.00	616600.99	6.09
MW-04	690246.26	616532.75	7.21

Note:
New Jersey State Plane Coordinate System (NAD83)

Table 3

New Jersey Department of Environmetal Protection
Hudson County Chromate Orphan Sites Group I
Site 077 - Eighth Street No. 2

Hexavalent Chromium Matrix Spike Recovery Summary

Matrix	Sample Delivery Group	Sample ID	Lab ID	Pre-Digestion Spike % Recovery	Post-Digestion Spike % Recovery	Hexavalent Chromium* (mg/kg)
Soil	A0738	77S109B	A0738-02	21.4	25.6	6.2 J
	A0784	77106A	A0791-01	0.0	68.0	0.87 U
		77103A	A0791-17	22.75	76.0	0.93 U
	A0791	77106A	A0791-01	0.0	68.0	0.87 U
		77103A	A0791-17	22.75	76.0	0.93 U
Groundwater	A1518	77MW03	A1518-9	0.0	33.0	0.10 U
		77MW03F	A1518-10	0.0	38.0	0.10 U
	A1619	77MW2	A1619-01	18	30.0	0.10 U
		77MW2F	A1619-02	22	98.0	0.10 U

Notes:
J = Estimated value
U = Not detected above the Sample Quantitation Limit (SQL)
*Based on dry weight of spiking aliquot
umber of soil samples with a pre-digestion spike recovery of 0% = 1
Number of soil samples with a pre-digestion spike recovery between 0 and 75% = 2
Number of soil samples with a pre-digestion spike recovery >75% = 0
Number of groundwater samples with a pre-digestion spike recovery of 0% = 2
Number of groundwater samples with a pre-digestion spike recovery between 0 and 75% = 2
Number of groundwater samples with a pre-digestion spike recovery >75% = 0

Table 4

New Jersey Department of Environmental Protection

Hudson County Chromate Orphan Sites Group 1

Site 077 - Eighth Street No. 2

Soil Analytical Results

			BORING NUMBER	77S101								77S102									
			SAMPLE ID	77S101A	77S101B	77S101C	77S101D	77S101E	77S101H	77S101I	77S101J	77S102A	DUP-02	77S102B	77S102C	77S102D	77S102E	77S102F	77S102G	77S102I	77S102J
			LAB ID	A0784-17	A0784-18	A0784-19	A0784-20	A0784-21	A0784-22	A0784-23	A0784-24	A0784-25	A0784-35	A0784-26	A0784-27	A0784-28	A0784-29	A0784-30	A0784-31	A0784-32	A0784-33
			DATE SAMPLED	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02
			SAMPLE INTERVAL (ft bgs)	1-2	2-3	3-4	7-8	9-10	13-14	14-15	15-16	1-2	1-2	2-3	3-4	5-6	6-7	7-8	11-12	14-15	15-16
			INTERVAL DESCRIPTION	(*1)	6	6	6	3	6	4	5	(*1)	(*1)	6	6	3	6	6	6	4	5
ANALYTE	*NJDEP SCC*																				
	RDCSCC	*NRDCSCC*	*IGWSCC*																		
Hexavalent Chromium	240	20	NC	2.5 B	0.98 UJ	0.95 UJ	1.0 B	1.2 B	1.5 B	1.7 B	3.40 B	3.1 B	0.95 B	3.6 B	3.2 B	1.3 UJ	1.1 B	1.4 B	4.7 B	1.9 B	2.1 B
TAL Subset Metals																					
Antimony	14	340	NC	0.19 UJ	0.20 UJ	0.16 UJ	0.21 B	1.6 JB	0.38 UJ	0.41 B	1.2 UJ	0.40 UJ	0.49 B	0.46 B	0.54 B	0.55 UJ	0.89 B	0.96 B	**19.[illegible] J**	0.66 B	0.97 B
Beryllium	2	2	NC	0.38 J	0.29 J	0.26 J	0.36 J	0.38 J	0.44 J	0.47 J	0.61 J	0.38 J	0.24 J	0.31 J	0.28 J	0.28 J	0.39 J	0.27 J	0.29 J	0.51 J	0.54 J
Cadmium	39	100	NC	0.084 J	0.13 J	0.23 J	0.17 J	0.30 J	0.038 U	0.039 U	0.12 U	1.2 J	0.68 J	0.038 U	0.11 J	0.055 U	0.10 J	0.047 U	1.8 J	0.040 U	0.095 U
Chromium	NC	NC	NC	64.8 J	34.3 J	29.2 J	17.3 J	20.5 J	14.4 J	13.7 J	24.1 J	70.0 J	44.8 J	86.2 J	226 J	25.0 J	10.9 J	7.9 J	7.5 J	13.7 J	20.1 J
Nickel	250	2,400	NC	16.5 J	22.2 J	9.0 J	13.5 J	11.6 J	14.1 J	11.0 J	18.5 J	10.6 J	7.3 J	12.8 J	9.0 J	9.2 J	8.5 J	8.6 J	6.1 J	11.2 J	11.2 J
Vanadium	370	7,100	NC	19.4 J	17.9 J	11.9 J	30.1 J	17.9 J	17.6 J	20.7 J	37.5 J	14.1 J	10.4 J	20.5 J	11.8 J	21.1 J	21.5 J	14 J	13.4 J	20.7 J	27 J
TPH	10,000	10,000	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

- NJDEP SCC = New Jersey Department of Environmental Protection Soil Cleanup Criteria (N.J.A.C. 7:26D 5/99)
- RDCSCC = Residential Direct Contact Soil Cleanup Criteria
- NRDCSCC = Non-Residential Direct Contact Soil Cleanup Criteria
- IGWSCC = Impact to Groundwater Soil Cleanup Criteria
- See Figure 3 for sample locations
- Shaded and bolded values meet or exceed most stringent NJDEP SCC
- All results in mg/kg
- B = Reported value is negated due to the presence of this analyte in the laboratory preparation blank
- J = Estimated value
- JB = Estimated value; some portion of the reported value may be attributable to blank contamination
- NA = Not Analyzed
- NC = No Criteria
- U = Not detected above the Sample Quantitation Limit (SQL)
- UJ = Not detected above the SQL; however, the SQL is an estimate

Sample Interval Description

- (1) Surface sample
- (*1) First soil encountered below ground surface
- (2) Sample associated with possible chromate waste based on visual observations
- (3) Immediately above groundwater table
- (4) Immediately above first undisturbed, natural geologic unit encountered
- (5) Immediately within the first undisturbed, natural geologic unit encountered
- (6) Sample collected within 3 feet of previously sampled interval, where the sample was not associated with the above-mentioned units

Table 4

New Jersey Department of Environmental Protection
Hudson County Chromate Orphan Sites Group 1
Site 077 - Eighth Street No. 2

Soil Analytical Results

			BORING NUMBER	77S103								77S105						
			SAMPLE ID	77S103A	77S103B	77S103C	77S103D	77S103E	77S103F	77S103G	DUP-03	77S105A	77S105B	77S105C	77S105D	77S105E	77S105F	77S105G
			LAB ID	A0791-17	A0791-18	A0791-19	A0791-20	A0791-21	A0791-22	A0791-23	A0791-24	A0791-10	A0791-11	A0791-12	A0791-13	A0791-14	A0791-15	A0791-16
			DATE SAMPLED	05/20/02	05/20/02	05/20/02	05/20/02	05/20/02	05/20/02	05/20/02	05/20/02	05/20/02	05/20/02	05/20/02	05/20/02	05/20/02	05/20/02	05/20/02
			SAMPLE INTERVAL (ft bgs)	2-3	3-4	6-7	7-8	11-12	14-15	15-16	15-16	3-4	7-8	10-11	11-12	15-16	17-18	18-19
			INTERVAL DESCRIPTION	(*1)	6	3	6	6	4	5	5	(*1), 3	6	6	6	4	5	6
ANALYTE	*NJDEP SCC*																	
	RDCSCC	*NRDCSCC*	*IGWSCC*															
Hexavalent Chromium	240	20	NC	0.93 UJ	0.90 UJ	1.1 UJ	1.2 UJ	1.3 UJ	1.2 UJ	1.4 UJ	1.5 UJ	1.1 UJ	1.5 UJ	1.2 UJ	1.3 UJ	1.2 UJ	1.5 UJ	2.3 UJ
TAL Subset Metals																		
Antimony	14	340	NC	0.20 UJ	0.16 UJ	4.2 J	1.4 JB	1.1 JB	0.80 B	0.59 UJ	0.6 UJ	**15 [illegible]**	2.0 JB	0.60 B	0.56 B	0.25 UJ	0.98 B	0.52 UJ
Beryllium	2	2	NC	0.30 J	0.13 J	0.20 J	0.26 J	0.46 J	1.0 J	0.78 J	0.68 J	0.35 J	0.35 J	0.34 J	0.53 J	0.34 J	0.38 J	0.59 J
Cadmium	39	100	NC	0.067 U	0.053 U	0.12 J	0.084 J	0.066 U	0.12 J	0.059 U	0.06 U	18.7 J	0.29 J	0.066 U	0.089 U	0.084 U	0.098 U	0.17 U
Chromium	NC	NC	NC	5.1 J	7.4 J	10.4 J	11.7 J	10.2 J	37.5 J	35.0 J	34.5 J	121 J	11.2 J	11.3 J	13.3 J	54.0 J	12.8 J	21.7 J
Nickel	250	2,400	NC	6.6 J	9.3 J	42.5 J	11.2 J	14.2 J	17.1 J	19.6 J	16.9 J	56.5 J	15.1 J	11.1 J	14.0 J	8.6 J	10.3 J	17.6 J
Vanadium	370	7,100	NC	10.9 J	12.0 J	13.3 J	15.3 J	22.4 J	43.6 J	41.5 J	38.7 J	60.9 J	15.2 J	13.9 J	21.7 J	23.5 J	18.2 J	32.7 J
TPH	10,000	10,000	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

- NJDEP SCC = New Jersey Department of Environmental Protection Soil Cleanup Criteria (N.J.A.C. 7:26D 5/99)
- RDCSCC = Residential Direct Contact Soil Cleanup Criteria
- NRDCSCC = Non-Residential Direct Contact Soil Cleanup Criteria
- IGWSCC = Impact to Groundwater Soil Cleanup Criteria
- See Figure 3 for sample locations
- Shaded and bolded values meet or exceed most stringent NJDEP SCC
- All results in mg/kg
- B = Reported value is negated due to the presence of this analyte in the laboratory preparation blank
- J = Estimated value
- JB = Estimated value; some portion of the reported value may be attributable to blank contamination
- NA = Not Analyzed
- NC = No Criteria
- U = Not detected above the Sample Quantitation Limit (SQL)
- UJ = Not detected above the SQL; however, the SQL is an estimate

Sample Interval Description

- (1) Surface sample
- (*1) First soil encountered below ground surface
- (2) Sample associated with possible chromate waste based on visual observations
- (3) Immediately above groundwater table
- (4) Immediately above first undisturbed, natural geologic unit encountered
- (5) Immediately within the first undisturbed, natural geologic unit encountered
- (6) Sample collected within 3 feet of previously sampled interval, where the sample was not associated with the above-mentioned units

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Table 4

New Jersey Department of Environmental Protection

Hudson County Chromate Orphan Sites Group 1

Site 077 - Eighth Street No. 2

Soil Analytical Results

			BORING NUMBER	77S106								
			SAMPLE ID	77S106A	77S106B	77S106C	77S106D	77S106E	77S106F	77S106G	77S106H	77S106I
			LAB ID	A0791-01	A0791-02	A0791-03	A0791-04	A0791-05	A0791-06	A0791-07	A0791-08	A0791-09
			DATE SAMPLED	05/20/02	05/20/02	05/20/02	05/20/02	05/20/02	05/20/02	05/20/02	05/20/02	05/20/02
			SAMPLE INTERVAL (ft bgs)	2-3	3-4	6-7	7-8	14-15	15-16	17-18	18-19	19-20
			INTERVAL DESCRIPTION	(*1)	3	6	6	6	6	6	4	5
ANALYTE	*NJDEP SCC*											
	RDCSCC	*NRDCSCC*	*IGWSCC*									
Hexavalent Chromium	240	20	NC	0.87 UJ	0.89 UJ	1.2 UJ	0.99 UJ	1.1 UJ	1.2 UJ	1.3 UJ	2.3 UJ	2.1 UJ
TAL Subset Metals												
Antimony	14	340	NC	0.36 B	2.3 JB	0.72 JB	0.32 B	0.27 B	1.4 JB	1.1 JB	0.44 UJ	0.38 UJ
Beryllium	2	2	NC	0.27 J	0.28 J	0.31 J	0.29 J	0.37 J	0.21 J	0.92 J	0.40 J	0.98 J
Cadmium	39	100	NC	0.58 J	5.6 J	1.2 J	0.062 U	0.53 J	0.071 U	0.86 J	0.15 U	0.13 U
Chromium	NC	NC	NC	18.3 J	67.2 J	13.5 J	9.1 J	17.9 J	9.7 J	32.7 J	15.4 J	22.6 J
Nickel	250	2,400	NC	19.3 J	38.0 J	15.0 J	12.5 J	8.6 J	8.3 J	20.5 J	7.9 J	35.4 J
Vanadium	370	7,100	NC	61.5 J	43.3 J	16.9 J	11.9 J	20.8 J	10.1 J	41.8 J	22.7 J	39.5 J
TPH	10,000	10,000	10,000	NA	NA	8,100	NA	NA	NA	NA	NA	NA

Notes:

- NJDEP SCC = New Jersey Department of Environmental Protection Soil Cleanup Criteria (N.J.A.C. 7:26D 5/99)
- RDCSCC = Residential Direct Contact Soil Cleanup Criteria
- NRDCSCC = Non-Residential Direct Contact Soil Cleanup Criteria
- IGWSCC = Impact to Groundwater Soil Cleanup Criteria
- See Figure 3 for sample locations
- Shaded and bolded values meet or exceed most stringent NJDEP SCC
- All results in mg/kg
- B = Reported value is negated due to the presence of this analyte in the laboratory preparation blank
- J = Estimated value
- JB = Estimated value; some portion of the reported value may be attributable to blank contamination
- NA = Not Analyzed
- NC = No Criteria
- U = Not detected above the Sample Quantitation Limit (SQL)
- UJ = Not detected above the SQL; however, the SQL is an estimate

Sample Interval Description

- (1) Surface sample
- (*1) First soil encountered below ground surface
- (2) Sample associated with possible chromate waste based on visual observations
- (3) Immediately above groundwater table
- (4) Immediately above first undisturbed, natural geologic unit encountered
- (5) Immediately within the first undisturbed, natural geologic unit encountered
- (6) Sample collected within 3 feet of previously sampled interval, where the sample was not associated with the above-mentioned units

Table 4

New Jersey Department of Environmental Protection

Hudson County Chromate Orphan Sites Group 1

Site 077 - Eighth Street No. 2

Soil Analytical Results

			BORING NUMBER	**77S107**								
			SAMPLE ID	77S107A	77S107B	77S107C	77S107D	77S107E	77S107F	77S107G	77S107H	77S107I
			LAB ID	A0784-01	A0784-02	A0784-03	A0784-04	A0784-05	A0784-06	A0784-07	A0784-08	A0784-09
			DATE SAMPLED	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02
			SAMPLE INTERVAL (ft bgs)	1-2	2-3	6-7	7-8	11-12	14-15	15-16	18-19	19-20
			INTERVAL DESCRIPTION	(*1)	3	6	6	6	6	6	4	5
ANALYTE	*NJDEP SCC*											
	RDCSCC	*NRDCSCC*	*IGWSCC*									
Hexavalent Chromium	240	20	NC	3.6 B	1.2 B	0.99 UJ	1.1 UJ	1.3 B	1.1 UJ	7.4 JB	0.93 UJ	2.0 UJ
TAL Subset Metals												
Antimony	14	340	NC	0.18 B	2.4 JB	1.7 JB	1.0 B	2.3 JB	1.1 JB	0.25 B	0.16 UJ	0.48 B
Beryllium	2	2	NC	0.16 J	0.14 J	0.23 J	0.19 J	0.23 J	1.3	0.087 J	0.42 J	0.93 J
Cadmium	39	100	NC	0.21 J	0.13 J	0.12 J	0.81 J	3.1 J	0.42 J	0.10 J	0.054 U	0.13 U
Chromium	NC	NC	NC	9.4 J	24.8 J	28.2 J	5.8 J	13.7 J	6.4 J	1.6 J	11.1 J	30.0 J
Nickel	250	2,400	NC	4.5 J	16.9 J	7.9 J	14.9 J	21.3 J	18.1 J	4.9 J	14.9 J	28.5 J
Vanadium	370	7,100	NC	7.6 J	9.6 J	10.1 J	9.0 J	19.7 J	25.8 J	3.3 J	14.7 J	37.3 J
TPH	10,000	10,000	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA

			BORING NUMBER	**77S108**							
			SAMPLE ID	77S108A	77S108B	77S108C	77S108D	77S108F	77S108H	77S108I	DUP-01
			LAB ID	A0784-10	A0784-11	A0784-12	A0784-13	A0784-14	A0784-15	A0784-16	A0784-34
			DATE SAMPLED	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02	05/17/02
			SAMPLE INTERVAL (ft bgs)	3-4	6-7	7-8	10-11	12-13	14-15	15-16	15-16
			INTERVAL DESCRIPTION	(*1)	3	6	6	4	5	6	6
ANALYTE	*NJDEP SCC*										
	RDCSCC	*NRDCSCC*	*IGWSCC*								
Hexavalent Chromium	240	20	NC	0.87 UJ	1.1 UJ	0.99 UJ	1.7 B	1.1 UJ	1.0 B	2.5 UJ	5.8 JB
TAL Subset Metals											
Antimony	14	340	NC	0.18 UJ	4.6 J	11.2 J	1.1 JB	2.1 JB	0.21 UJ	0.51 UJ	1.2 UJ
Beryllium	2	2	NC	0.19 J	0.40 J	0.37 J	0.29 J	0.34 J	0.36 J	0.77 J	0.42 J
Cadmium	39	100	NC	1.0 J	2.8 J	0.88 J	0.72 J	1.5 J	0.080 J	0.17 U	0.50 J
Chromium	NC	NC	NC	16.7 J	123 J	13.3 J	14.0 J	44.7 J	10.1 J	26.0 J	11.6 J
Nickel	250	2,400	NC	6.2 J	14.7 J	13.5 J	12.3 J	13.6 J	14.0 J	24.8 J	6.6 J
Vanadium	370	7,100	NC	14.3 J	28.1 J	17.3 J	23.5 J	20.4 J	13.9 J	35.6 J	27.4 J
TPH	10,000	10,000	10,000	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

- NJDEP SCC = New Jersey Department of Environmental Protection Soil Cleanup Criteria (N.J.A.C. 7:26D 5/99)
- RDCSCC = Residential Direct Contact Soil Cleanup Criteria
- NRDCSCC = Non-Residential Direct Contact Soil Cleanup Criteria
- IGWSCC = Impact to Groundwater Soil Cleanup Criteria
- See Figure 3 for sample locations
- Shaded and bolded values meet or exceed most stringent NJDEP SCC
- All results in mg/kg
- B = Reported value is negated due to the presence of this analyte in the laboratory preparation blank
- J = Estimated value
- JB = Estimated value; some portion of the reported value may be attributable to blank contamination
- NA = Not Analyzed.
- NC = No Criteria
- U = Not detected above the Sample Quantitation Limit (SQL)
- UJ = Not detected above the SQL; however, the SQL is an estimate

Sample Interval Description

- (1) Surface sample
- (*1) First soil encountered below ground surface
- (2) Sample associated with possible chromate waste based on visual observations
- (3) Immediately above groundwater table
- (4) Immediately above first undisturbed, natural geologic unit encountered
- (5) Immediately within the first undisturbed, natural geologic unit encountered
- (6) Sample collected within 3 feet of previously sampled interval, where the sample was not associated with the above-mentioned units

Table 4

New Jersey Department of Environmental Protection

Hudson County Chromate Orphan Sites Group 1

Site 077 - Eighth Street No. 2

Soil Analytical Results

BORING NUMBER				77S109				77S110						77S111		
SAMPLE ID				77S109A	77S109B	77S109C	77S109D	77S110A	77S110B	77S110C	77S110D	77S110E	77S110F	77S111A	77S111B	77S111C
LAB ID				A0738-01	A0738-02	A0738-03	A0738-04	A0738-05	A0738-06	A0738-07	A0738-08	A0738-09	A0738-10	A0738-11	A0738-12	A0738-13
DATE SAMPLED				05/13/02	05/13/02	05/13/02	05/13/02	05/13/02	05/13/02	05/13/02	05/13/02	05/13/02	05/13/02	05/13/02	05/13/02	05/13/02
SAMPLE INTERVAL (ft bgs)				0-1	1-2	2-3	3-4	0-1	1-2	2-3	3-4	4-5	5-6	0-1	1-2	2-3
INTERVAL DESCRIPTION				1	3	6	6	1	3	6	6	6	6	1	3	6
ANALYTE	*NJDEP SCC*															
	RDCSCC	*NRDCSCC*	*IGWSCC*													
Hexavalent Chromium	240	20	NC	2.3 JB	6.2 J	8.8 J	2.0 JB	1.1 UJ	1.1 UJ	1.0 UJ	1.1 UJ	1.3 UJ	1.2 UJ	1.0 UJ	1.9 JB	1.3 UJ
TAL Subset Metals																
Antimony	14	340	NC	2.8 J	1.1 J	0.83 J	2.0 J	1.5 J	3.3 J	1.3 J	1.7 J	1.3 J	1.1 J	1.9 J	0.97 J	3.5 J
Beryllium	2	2	NC	0.42 J	0.69 J	0.38 J	0.40 J	0.44 J	0.50 J	0.32 J	0.37 J	0.41 J	0.33 J	0.60 J	0.26 J	0.41 J
Cadmium	39	100	NC	1.9 J	1.1 J	1.0 J	1.1 J	2.2 J	1.3 J	2.3	1.0 J	0.26 J	2.6 J	1.8 J	1.7 J	0.32 J
Chromium	NC	NC	NC	37.1	41.1	63.0	23.0	37.2	27.4	10.3	10.4	14.1	12.5	48.8	11.9	28.8
Nickel	250	2,400	NC	25.2	20.3	19.7	14.0	22.5	23.0	15.6	11.5	13.1	11.0	26.7	11.3	22.3
Vanadium	370	7,100	NC	38.3	33.7	16.2	18.4	44.6	35.7	13.2	14.9	15.4 J	15.4	50.5	14.6	28.1
TPH	10,000	10,000	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

- NJDEP SCC = New Jersey Department of Environmental Protection Soil Cleanup Criteria (N.J.A.C. 7:26D 5/99)
- RDCSCC = Residential Direct Contact Soil Cleanup Criteria
- NRDCSCC = Non-Residential Direct Contact Soil Cleanup Criteria
- IGWSCC = Impact to Groundwater Soil Cleanup Criteria
- See Figure 3 for sample locations
- Shaded and bolded values meet or exceed most stringent NJDEP SCC
- All results in mg/kg
- B = Reported value is negated due to the presence of this analyte in the laboratory preparation blank
- J = Estimated value
- JB = Estimated value; some portion of the reported value may be attributable to blank contamination
- NA = Not Analyzed
- NC = No Criteria
- U = Not detected above the Sample Quantitation Limit (SQL)
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Sample Interval Description

- (1) Surface sample
- (*1) First soil encountered below ground surface
- (2) Sample associated with possible chromate waste based on visual observations
- (3) Immediately above groundwater table
- (4) Immediately above first undisturbed, natural geologic unit encountered
- (5) Immediately within the first undisturbed, natural geologic unit encountered
- (6) Sample collected within 3 feet of previously sampled interval, where the sample was not associated with the above-mentioned units

Table 6

New Jersey Department of Environmental Protection

Hudson County Chromate Orphan Sites Group I

Site 077 - Eighth Street No. 2

Groundwater Analytical Results

MONITORING WELL ID		MW-01		MW-02		MW-03				MW-04		Field Blank		Trip Blank
SAMPLE ID		77MW01 (Unfiltered)	77MW01F (Filtered)	77MW02 (Unfiltered)	77MW02F (Filtered)	77MW03 (Unfiltered)	DUP-01 (77MW3)	77MW03F (Filtered)	DUP-01F (77MW3F)	77MW04 (Unfiltered)	77MW04F (Filtered)	FB01 (Unfiltered)	FB01F (Filtered)	TRIPBLANK (Unfiltered)
LAB ID		A1518-07	A1518-08	A1518-03	A1518-04	A1518-09	A1518-11	A1518-10	A1518-12	A1518-01	A1518-02	A1518-05	A1518-06	A1518-13
DATE SAMPLED		10/18/02	10/18/02	10/17/02	10/17/02	10/18/02	10/18/02	10/18/02	10/18/02	10/17/02	10/17/02	10/17/02	10/17/02	10/18/02
ANALYTE	*GWQS/ IGWQC*	ROUND 1												
Hexavalent Chromium (ug/L)	NC	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	NA
TAL Metals (ug/L)														
Aluminium	200	21.4 J	19.0 U	**557**	19.0 U	19.0 U	31.1 J	19.0 U	19.2 J	99.3 J	19.0 U	19.0 U	19.0 U	NA
Antimony	20	1.4 J	0.94 J	2.5 J	0.90 U	1.7 J	1.5 J	1.4 J	1.5 J	2.3 J	2.9 J	1.0 J	0.90 U	NA
Arsenic	8	2.0 U	2.0 U	**[illegible]**	**[illegible]**	4.5 J	6.1 J	5.8 J	4.6 J	2.0 U	2.0 U	2.0 U	2.0 U	NA
Barium	2,000	75.3 J	75.4 J	444	429	359	355	376	370	289	267	8.0 B	7.2 B	NA
Cadmium	4	0.26 J	0.20 U	1.3 J	0.65 J	0.30 J	0.33 J	0.25 J	0.22 J	0.34 J	0.20 U	0.20 U	0.20 U	NA
Calcium	NC	59,200	58,900	169,000	164,000	99,000	98,900	103,000	102,000	259,000	269,000	70.0 U	70.0 U	NA
Chromium	100	6.2 J	4.8 J	2.7 J	1.1 J	0.49 J	0.47 J	0.37 J	0.34 J	0.64 J	0.3 J	0.30 U	0.30 U	NA
Cobalt	100*	1.3 J	1.1 J	0.2 U	0.20 U	1.6 J	1.4 J	1.4 J	1.1 J	0.93 J	0.75 J	0.27 J	0.37 J	NA
Copper	1,000	5.2 B	1.2 B	0.8 U	0.80 U	0.80 U	1.0 B	0.80 U	0.8 U	7.9 JB	1.7 B	3.0 B	1.6 B	NA
Iron	300	**4,660**	**4,670**	**18,800**	**17,500**	**18,600**	**18,600**	**19,200**	**19,100**	**26,700**	**25,040**	20.8 B	25.4 B	NA
Lead	10	3.8	0.50 U	0.5 U	0.50 U	1.2 J	1.6 J	0.50 U	0.5 U	9.9	0.50 U	0.50 U	0.50 U	NA
Magnesium	NC	4,500 J	4,490 J	23,200	22,800	7,730	7,790	9,190	8,930	30,800	31,900	5.0 U	5.0 U	NA
Manganese	50	**[illegible]**	**[illegible]**	**1,840**	**1,680**	**1,600**	**1,587**	**1,609**	**[illegible]**	**1,020**	**1,050**	0.30 UJ	0.30 UJ	NA
Nickel	100	4.1 J	3.6 JB	2.3 JB	1.1 B	8.0 J	7.8 J	7.0 J	6.8 J	2.5 JB	2.1 JB	0.43 B	0.45 B	NA
Potassium	NC	4,300 J	4,310 J	39,700	39,600	11,000	10,700	12,100	11,800	24,800	25,200	371 J	268 J	NA
Selenium	50	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	NA
Silver	NC	0.70 U	0.70 U	0.7 U	0.70 U	0.7 U	0.7 U	0.7 U	0.7 U	0.70 U	0.70 U	0.70 U	0.70 U	NA
Sodium	50,000	8,810	8,590	**269,000**	**264,000**	22,500	23,000	32,200	31,000	**159,000**	**165,000**	671 JB	536 JB	NA
Vanadium	NC	1.0 J	0.81 J	2.4 J	1.3 J	0.39 J	0.43 J	0.37 J	0.34 J	3.2 J	2.8 J	0.30 U	0.30 U	NA
Zinc	5,000	28.3	12.2 J	3.0 U	3.0 U	293	294	90.2	93	81.3	21.5	3.0 U	3.0 U	NA
TCL VOCs (ug/L)														
Methyl tert-Butyl Ether	70*	10 U	NA	10 U	NA	**150**	**150**	NA	NA	3 J	NA	10 U	NA	10 U
Acetone	700	10 U	NA	10 U	NA	10 U	10 U	NA	NA	10 U	NA	10 U	NA	10 U
Methylene Chloride	2	10 U	NA	10 U	NA	10 U	10 U	NA	NA	10 U	NA	**[illegible]**	NA	10 U
TCL SVOCs (ug/L)														
Acenapthene	4,000	10 U	NA	10 U	NA	4 J	4 J	NA	NA	10 U	NA	10 U	NA	NA
bis (2-Ethylhexyl) phthalate	3	10 U	NA	10 U	NA	10 U	10 U	NA	NA	10 U	NA	10 U	NA	NA
Fluorene	30	10 U	NA	10 U	NA	2 J	2 J	NA	NA	10 U	NA	10 U	NA	NA
Fluoranthene	300	10 U	NA	10 U	NA	10 U	10 U	NA	NA	10 U	NA	10 U	NA	NA
Pyrene	200	10 U	NA	10 U	NA	10 U	10 U	NA	NA	10 U	NA	10 U	NA	NA
Others (mg/L)														
Total Organic Carbon	NC	8.7	9.8	34	30	15	16	25	22	20	27	6.0 U	6.0 U	NA
Total Solids	NC	290	280	2,800	2,500	450	460	480	490	1,500	1,500	16	17	NA
Total Suspended Solids	NC	26	10 U	84	61	33	24	19	13	110	12	10 U	10 U	NA

Notes:
- This table shows only those analytes detected above the Sample Quantitation Limit (SQL), with the exception of hexavalent chromium.
- GWQS = NJDEP Class IIA Groundwater Quality Standards
- IGWQC = Interim Groundwater Quality Criteria
- *Denotes the IGWQC
- Shaded and bolded values meet or exceed GWQS/IGWQC
- B = Reported value is negated due to the presence of this analyte in the laboratory preparation blank
- J = Estimated value
- JB = Estimated value; some portion of the reported value may be attributable to blank contamination
- NA = Not Analyzed
- NC = No Criteria
- U = Not detected above the SQL

Table 6

New Jersey Department of Environmental Protection

Hudson County Chromate Orphan Sites Group I

Site 077 - Eighth Street No. 2

Groundwater Analytical Results

MONITORING WELL ID		MW-01		MW-02				MW-03		MW-04		Field Blank				Trip Blank
SAMPLE ID		77MW1 (Unfiltered)	77MW1F (Filtered)	77MW2 (Unfiltered)	DUPE1 (Unfiltered)	77MW2F (Filtered)	DUPE1F (Filtered)	77MW3 (Unfiltered)	77MW3F (Filtered)	77MW4 (Unfiltered)	77MW4F (Filtered)	FB01 (Unfiltered)	FB01F (Filtered)	FB02 (Unfiltered)	FB02F (Filtered)	TRIPBLANK (Unfiltered)
LAB ID		A1619-09	A1619-10	A1619-01	A1619-03	A1619-02	A1619-04	A1619-11	A1619-12	A1619-05	A1619-06	A1619-07	A1619-08	A1619-13	A1619-14	A1619-15
DATE SAMPLED		11/08/02	11/08/02	11/07/02	11/07/02	11/07/02	11/07/02	11/08/02	11/08/02	11/07/02	11/07/02	11/07/02	11/07/02	11/08/02	11/08/02	11/08/02
ANALYTE	*GWQS/ IGWQC*	ROUND 2														
Hexavalent Chromium (ug/L)	NC	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA
TAL Metals (ug/L)																
Aluminium	200	59.1 J	20.7 J	21.4 J	48.7 J	19.0 U	19.0 J	93.6 J	19.0 U	31.8 J	19.0 U	19.0 U	27.1 J	19.0 U	20 J	NA
Antimony	20	2.5 J	3.1 J	1.8 J	2.5 J	2.5 J	4.7 J	3.0 J	3.7 J	3.6 J	2.8 J	2.1 J	1.9 J	2.2 J	2.1 J	NA
Arsenic	8	2.0 U	2.0 U	**35.8**	[illegible]	[illegible]	**34.5**	6.6 J	2.0 J	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	NA
Barium	2,000	71.1 J	68.7 J	400	413	366	395	394	344	338	303	0.67 J	0.63 J	0.64 J	0.30 U	NA
Cadmium	4	0.29 J	0.20 U	0.57 J	0.59 J	0.45 J	0.32 J	1.5 J	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA
Calcium	NC	63,700	65,500	151,000	156,000	135,000	144,000	96,800	96,900	255,000	243,000	83.0 J	101 J	74.9 J	108 J	NA
Chromium	100	5.2 J	3.3 J	0.66 J	1.1 J	0.37 J	0.35 J	0.69 J	0.38 J	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.33 J	NA
Cobalt	100*	0.75 J	0.75 J	0.20 U	0.20 U	0.20 U	0.20 U	1.4 J	1.0 J	0.64 J	0.48 J	0.27 J	0.20 U	0.20 U	0.20 U	NA
Copper	1,000	0.80 U	0.80 U	0.80 U	0.80 U	0.80 U	0.80 U	1.6 J	0.80 U	0.80 U	0.80 U	0.80 U	0.80 U	0.80 U	0.80 U	NA
Iron	300	**5,910**	[illegible]	**38,900**	**38,800**	**36,300**	**39,100**	**16,600**	**14,600**	**40,900**	[illegible]	47.0 J	27.9 J	37.0 J	27.8 J	NA
Lead	10	2.3 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	**33.6**	0.50 U	1.4 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	NA
Magnesium	NC	5,390	5,470	24,200	23,600	22,700	24,500	7,160	7,300	32,900	32,400	20.4 J	15.4 J	21.0 J	21.3 J	NA
Manganese	50	**425**	**229**	**1,860**	**1,920**	**1,460**	**1,750**	**518**	**512**	**1,300**	**1,290**	3.5 J	1.7 J	2.4 J	2.0 J	NA
Nickel	100	3.4 J	2.9 J	0.30 U	0.84 J	0.30 U	0.30 U	9.8 J	7.4 J	1.6 J	1.3 J	0.77 J	0.36 J	0.60 J	0.44 J	NA
Potassium	NC	4,300 J	4,340 J	34,200	38,200	35,700	37,300	9,190	9,150	23,600	22,900	205 J	58.0 U	58.0 U	58.0 U	NA
Selenium	50	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.1 J	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	NA
Silver	NC	0.70 U	0.70 U	17.3	0.70 U	1.0 J	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	NA
Sodium	50,000	8,740	8,710	**582,000**	**560,000**	**507,000**	**511,000**	13,100	13,700	**854,000**	**859,000**	850 J	515 J	437 J	400 J	NA
Vanadium	NC	2.0 J	0.86 J	0.81 J	0.89 J	0.72 J	0.87 J	1.3 J	0.37 J	1.0 J	0.77 J	0.30 U	0.30 U	0.30 U	0.31 J	NA
Zinc	5,000	48.4	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	1,570	289	31.1	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	NA
TCL VOCs (ug/L)																
Methyl tert-Butyl Ether	70*	10 U	NA	10 U	10 U	NA	NA	**130**	NA	3 J	NA	10 U	NA	10 U	NA	10 U
Acetone	700	10 U	NA	10 U	10 U	NA	NA	10 U	NA	10 U	NA	27	NA	10 U	NA	10 U
Methylene Chloride	2	10 U	NA	10 U	10 U	NA	NA	10 U	NA	10 U	NA	**120**	NA	[illegible]	NA	1 J
TCL SVOCs (ug/L)																
Acenapthene	4,000	10 U	NA	10 U	10 U	NA	NA	2 J	NA	10 U	NA	10 U	NA	10 U	NA	NA
bis (2-Ethylhexyl) phthalate	3	2 J	NA	10 U	10 U	NA	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	NA
Fluorene	30	10 U	NA	10 U	10 U	NA	NA	2 J	NA	10 U	NA	10 U	NA	10 U	NA	NA
Fluoranthene	300	10 U	NA	10 U	10 U	NA	NA	1 J	NA	10 U	NA	10 U	NA	10 U	NA	NA
Pyrene	200	10 U	NA	10 U	10 U	NA	NA	1 J	NA	10 U	NA	10 U	NA	10 U	NA	NA
Others (mg/L)																
Total Organic Carbon	NC	10	8	9	8	11	9	7	13	19	12	NA	NA	NA	10 U	NA
Total Solids	NC	250	260	2,000	2,000	1,600	1,900	380	390	1,300	1,400	10 U	10 U	12	10 U	NA
Total Suspended Solids	NC	10	14	41	39	32	22	57	22	33	54	10 U	10 U	10 U	10 U	NA

Notes:
- This table shows only those analytes detected above the Sample Quantitation Limit (SQL), with the exception of hexavalent chromium.
- GWQS = NJDEP Class IIA Groundwater Quality Standards
- IGWQC = Interim Groundwater Quality Criteria
- *Denotes the IGWQC
- Shaded and bolded values meet or exceed GWQS/IGWQC
- B = Reported value is negated due to the presence of this analyte in the laboratory preparation blank
- J = Estimated value
- JB = Estimated value; some portion of the reported value may be attributable to blank contamination
- NA = Not Analyzed
- NC = No Criteria
- U = Not detected above the SQL

Table 7

New Jersey Department of Environmental Protection

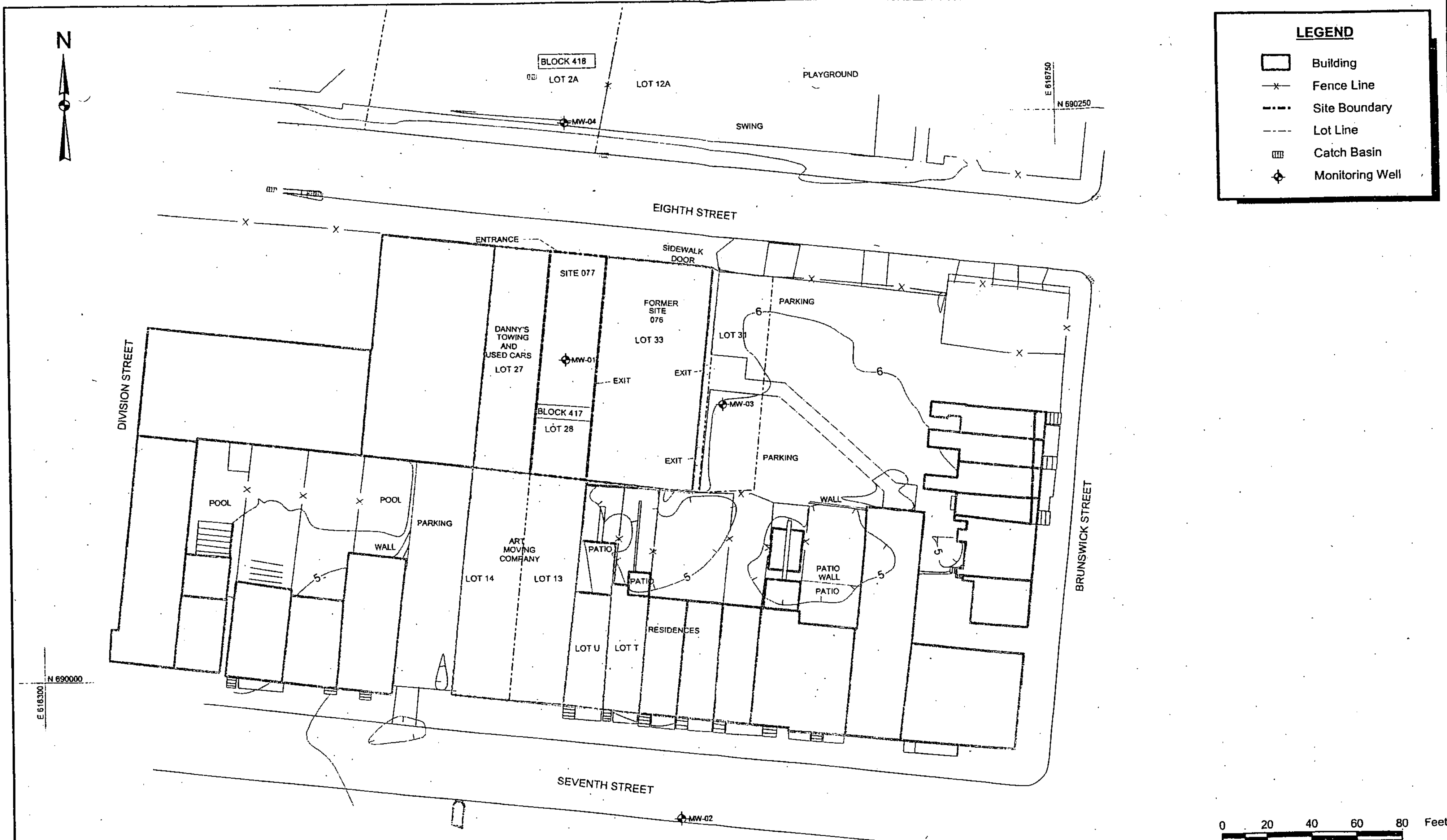
Hudson County Chromate Orphan Sites Group I

Site 077 - Eighth Street No. 2

Field and Trip Blank Analytical Results

QUALITY CONTROL SAMPLE		Field Blank		Trip Blank	Field Blank				Trip Blank
SAMPLE ID		FB01 (Unfiltered)	FB01F (Filtered)	TRIPBLANK (Unfiltered)	FB01 (Unfiltered)	FB01F (Filtered)	FB02 (Unfiltered)	FB02F (Filtered)	TRIPBLANK (Unfiltered)
LAB ID		A1518-05	A1518-06	A1518-13	A1619-07	A1619-08	A1619-13	A1619-14	A1619-15
DATE SAMPLED		10/17/02	10/17/02	10/18/02	11/07/02	11/07/02	11/08/02	11/08/02	11/08/02
ANALYTE	*GWQS/ IGWQC*	**ROUND 1**			**ROUND 2**				
Hexavalent Chromium (ug/L)	NC	0.10 UJ	0.10 UJ	NA	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	NA
TAL Metals (ug/L)									
Aluminium	200	19.0 U	19.0 U	NA	19.0 U	27.1 J	19.0 U	20 J	NA
Antimony	20	1.0 J	0.90 U	NA	2.1 J	1.9 J	2.2 J	2.1 J	NA
Barium	2000	8.0 B	7.2 B	NA	0.67 B	0.63 B	0.64 B	0.30 U	NA
Calcium	NC	70.0 U	70.0 U	NA	83.0 J	101 J	74.9 J	108 J	NA
Chromium	100	0.30 U	0.30 U	NA	0.30 U	0.30 U	0.30 U	0.33 J	NA
Cobalt	100*	0.27 J	0.37 J	NA	0.27 B	0.20 U	0.20 U	0.20 U	NA
Copper	1000	3.0 B	1.6 B	NA	0.80 U	0.80 U	0.80 U	0.80 U	NA
Iron	300	20.8 B	25.4 B	NA	47.0 B	27.9 B	37.0 B	27.8 B	NA
Magnesium	NC	5.0 U	5.0 U	NA	20.4 B	15.4 B	21.0 B	21.3 B	NA
Manganese	50	0.30 UJ	0.30 UJ	NA	3.5 B	1.7 B	2.4 B	2.0 B	NA
Nickel	100	0.43 B	0.45 B	NA	0.77 B	0.36 B	0.60 B	0.44 B	NA
Potassium	NC	371 J	268 J	NA	205 J	58.0 UJ	58.0 UJ	58.0 UJ	NA
Sodium	50000	671 JB	536 JB	NA	850 JB	515 JB	437 JB	400 JB	NA
Vanadium	NC	0.30 U	0.30 U	NA	0.30 U	0.30 U	0.30 U	0.31 J	NA
TCL VOCs (ug/L)									
Acetone	700	10 U	NA	10 U	27	NA	10 U	NA	10 U
Methylene Chloride	2	**2 J**	NA	10 U	**120**	NA	**3 J**	NA	1 J
Others (mg/L)									
Total Solids	NC	16	17	NA	10 U	10 U	12	10 U	NA

Notes:
- This table shows only those analytes detected above the Sample Quantitation Limit (SQL), with the exception of hexavalent chromium.
- GWQS = NJDEP Class IIA Groundwater Quality Standards
- IGWQC = Interim Groundwater Quality Criteria
- *Denotes the IGWQC
- Shaded and bolded values meet or exceed GWQS
- B = Reported value is negated due to the presence of this analyte in the laboratory preparation blank
- J = Estimated value
- JB = Estimated value; some portion of the reported value may be attributable to blank contamination
- NA = Not Analyzed
- NC = No Criteria
- U = Not detected above the SQL
- UJ = Not detected above the SQL; however, the SQL is an estimate



Base map source: L. Robert Kimball & Associates, Inc. April 3, 1997
NJ State Plane Coordinate System (NAD83)

N.J. Department of Environmental Protection

HUDSON COUNTY CHROMATE ORPHAN SITES - SITE 077 - 8TH STREET NO. 2, JERSEY CITY, HUDSON COUNTY, NEW JERSEY

SITE PLAN

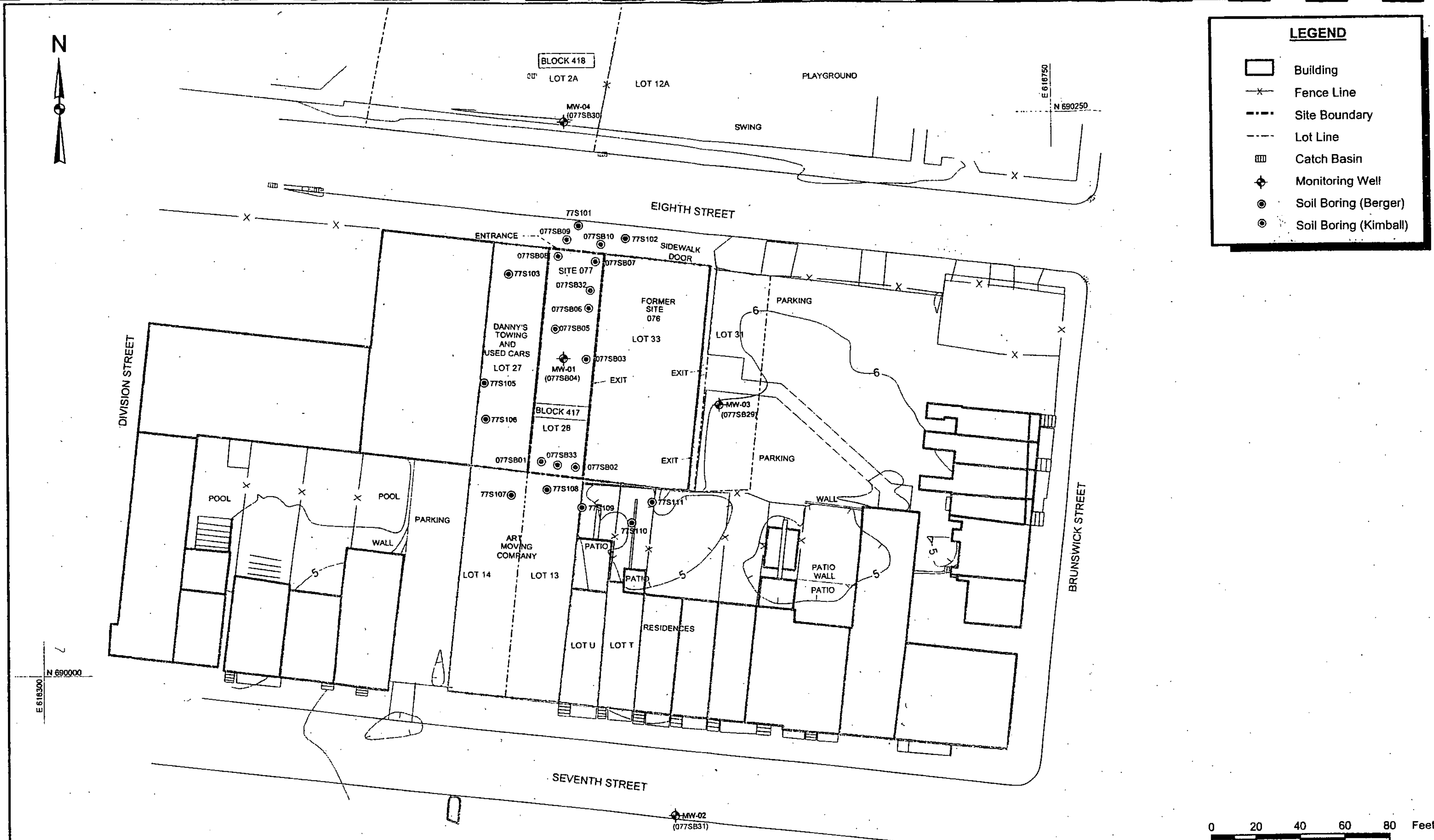
NJDEP CONTRACT No. A-85149

The Louis Berger Group, Inc.
30 Vreeland Road
Florham Park, NJ

FIGURE 2

S077_SP|27JAN04

268



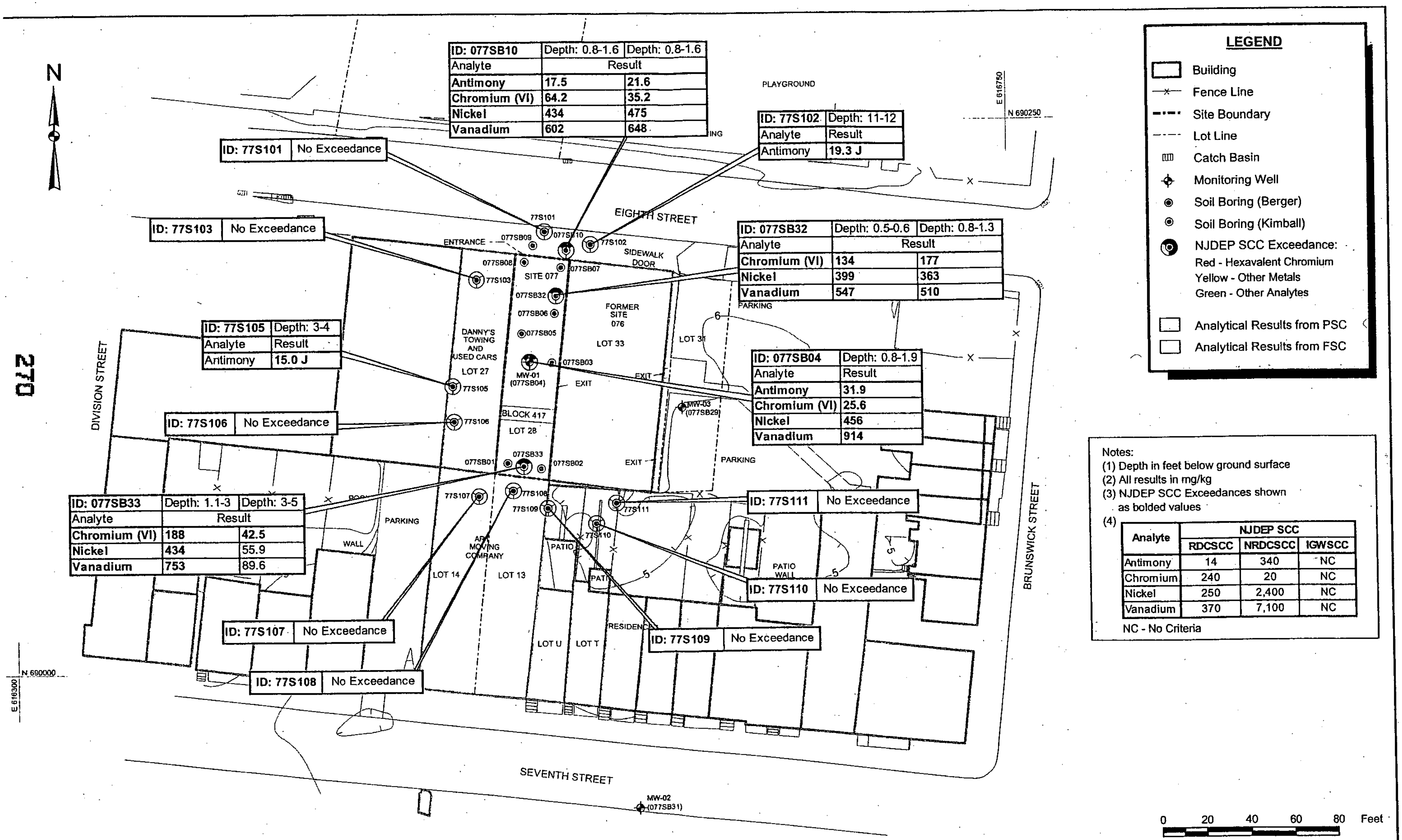
Base map source: L. Robert Kimball & Associates, Inc. April 3, 1997
NJ State Plane Coordinate System (NAD83)

N.J. Department of Environmental Protection	HUDSON COUNTY CHROMATE ORPHAN SITES - SITE 077 - 8TH STREET NO. 2, JERSEY CITY, HUDSON COUNTY, NEW JERSEY **SOIL SAMPLE LOCATION PLAN** NJDEP CONTRACT No. A-85149	The Louis Berger Group, Inc. 30 Vreeland Road Florham Park, NJ	FIGURE 3

S077_SLP27JAN04

269

270



Base map source: L. Robert Kimball & Associates, Inc. April 3, 1997
NJ State Plane Coordinate System (NAD83)

N.J. Department of Environmental Protection

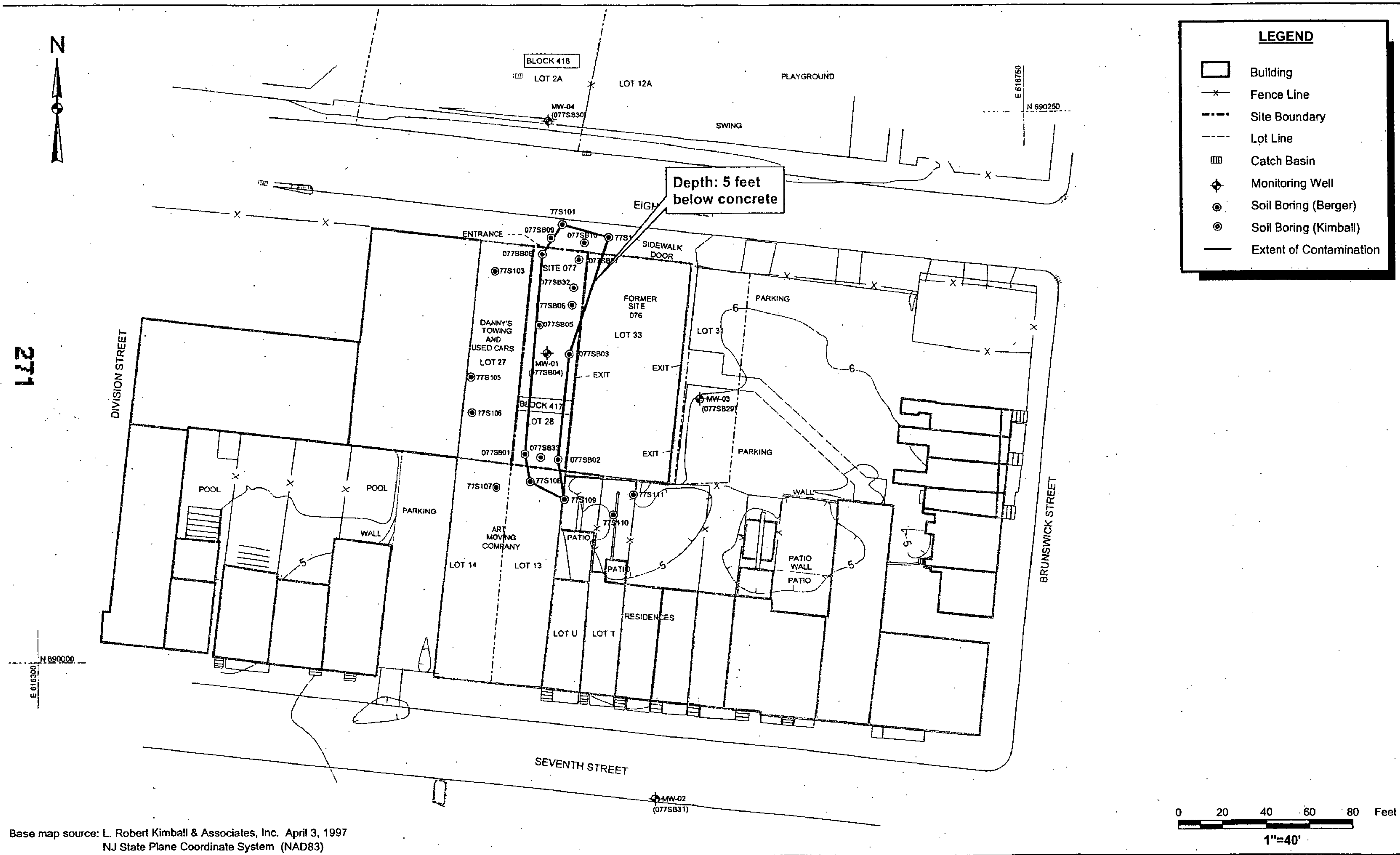
HUDSON COUNTY CHROMATE ORPHAN SITES - SITE 077 - 8TH STREET NO. 2, JERSEY CITY, HUDSON COUNTY, NEW JERSEY

SOIL CONTAMINANT DISTRIBUTION MAP

NJDEP CONTRACT No. A-85149

The Louis Berger Group, Inc.
30 Vreeland Road
Florham Park, NJ

FIGURE 5



Base map source: L. Robert Kimball & Associates, Inc. April 3, 1997
NJ State Plane Coordinate System (NAD83)

N.J. Department of Environmental Protection

HUDSON COUNTY CHROMATE ORPHAN SITES - SITE 077 - 8TH STREET NO. 2, JERSEY CITY, HUDSON COUNTY, NEW JERSEY

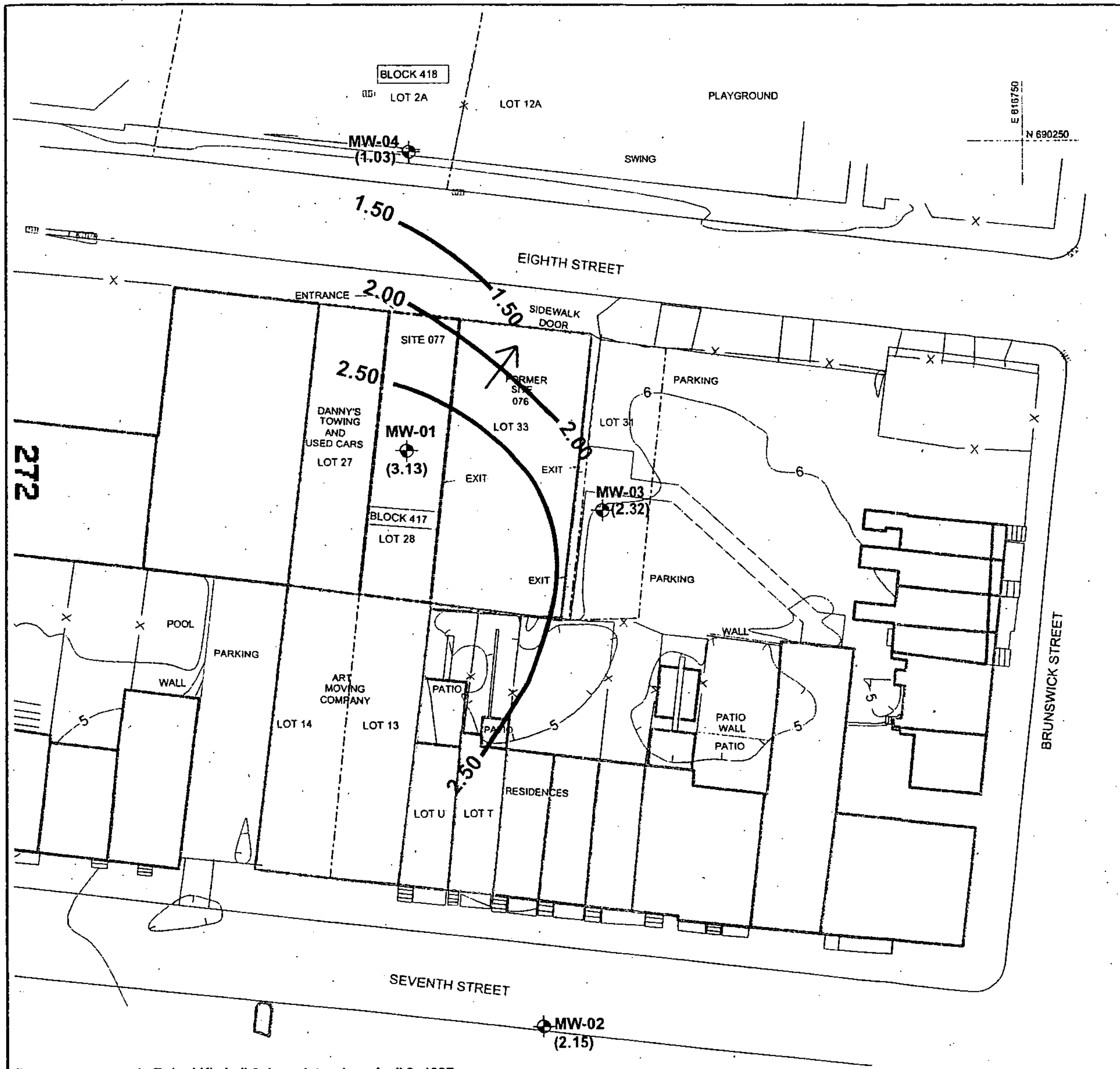
EXTENT OF SOIL CONTAMINATION

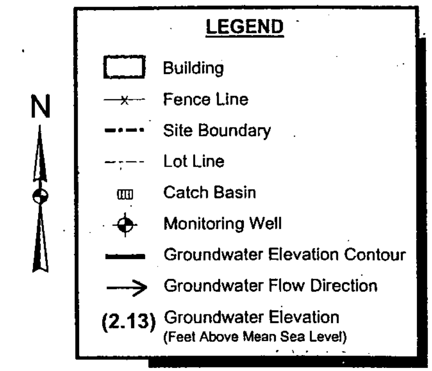
NJDEP CONTRACT No. A-85149

The Louis Berger Group, Inc.
30 Vreeland Road
Florham Park, NJ

FIGURE 6

271





Monitoring Well ID	Sample ID	Hexavalent Chromium	Total Chromium	Antimony	Beryllium	Cadmium	Nickel	Vanadium
GWQS		NC	100	20	20	4	100	NC
ROUND 1								
MW-01	77MW01	0.10 UJ	6.2 J	1.4 J	0.20 U	0.26 J	4.1 J	1.0 J
	77MW01F	0.10 UJ	4.8 J	0.94 J	0.20 U	0.20 U	3.6 JB	0.81 J
MW-02	77MW02	0.10 UJ	2.7 J	2.5 J	0.20 U	1.3 J	2.3 JB	2.4 J
	77MW02F	0.10 UJ	1.1 J	0.90 U	0.20 U	0.65 J	1.1 B	1.3 J
MW-03	77MW03	0.10 UJ	0.49 J	1.7 J	0.20 U	0.30 J	8.0 J	0.39 J
	DUP-01	0.10 UJ	0.47 J	1.5 J	0.20 U	0.33 J	7.8 J	0.43 J
	77MW03F	0.10 UJ	0.37 J	1.4 J	0.20 U	0.25 J	7.0 J	0.37 J
	DUP-01F	0.10 UJ	0.34 J	1.5 J	0.20 U	0.22 J	6.8 J	0.34 J
MW-04	77MW04	0.10 UJ	0.64 J	2.3 J	0.20 U	0.34 J	2.5 JB	3.2 J
	77MW04F	0.10 UJ	0.3 J	2.9 J	0.20 U	0.20 U	2.1 JB	2.8 J

Notes:
- GWQS = NJDEP Class IIA Groundwater Quality Standards
- Shaded and bolded values exceed most stringent NJDEP SCC
- All results in ug/l
- B = Reported value is negated due to the presence of this analyte in the laboratory preparation blank.
- J = Estimated value
- JB = Estimated value; some portion of the reported value may be attributable to the blank contamination.
- NC = No Criteria
- U = Not detected above the Sample Quantitation Limit (SQL)
- UJ = Not detected above the SQL; however, the SQL is an estimate.

0 20 40 60 80 Feet
1"=40'

Base map source: L. Robert Kimball & Associates, Inc. April 3, 1997
NJ State Plane Coordinate System (NAD83)

N.J. Department of Environmental Protection

HUDSON COUNTY CHROMATE ORPHAN SITES - SITE 077 - 8TH STREET NO. 2, JERSEY CITY, HUDSON COUNTY, NEW JERSEY

GROUNDWATER ELEVATION AND ANALYTICAL RESULTS PLAN - OCTOBER 2002

NJDEP CONTRACT No. A-85149

The Louis Berger Group, Inc.
30 Vreeland Road
Florham Park, NJ

FIGURE 7

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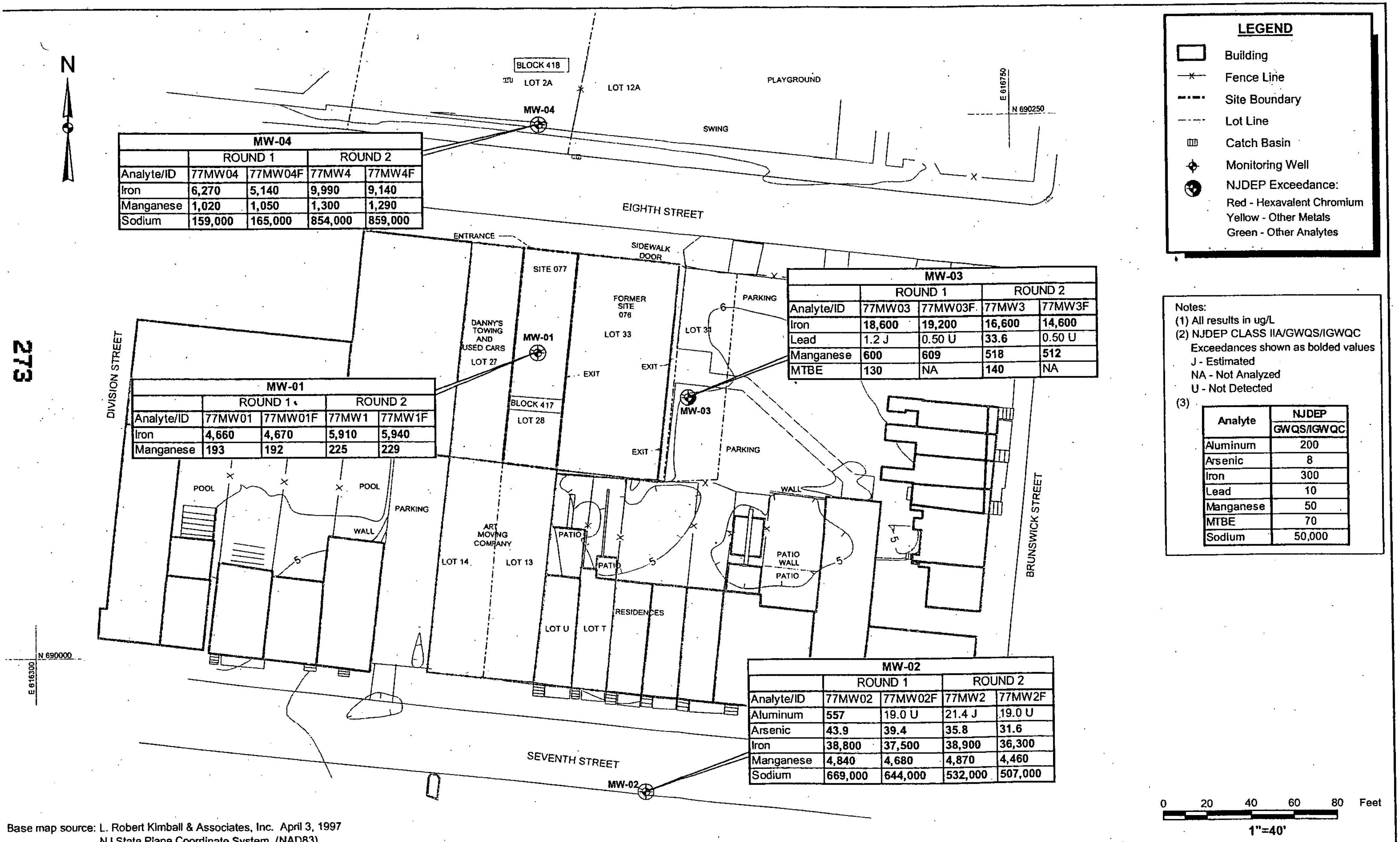


MW-04				
	ROUND 1		ROUND 2	
Analyte/ID	77MW04	77MW04F	77MW4	77MW4F
Iron	**6,270**	**5,140**	**9,990**	**9,140**
Manganese	**1,020**	**1,050**	**1,300**	**1,290**
Sodium	**159,000**	**165,000**	**854,000**	**859,000**

MW-01				
	ROUND 1		ROUND 2	
Analyte/ID	77MW01	77MW01F	77MW1	77MW1F
Iron	**4,660**	**4,670**	**5,910**	**5,940**
Manganese	**193**	**192**	**225**	**229**

MW-03				
	ROUND 1		ROUND 2	
Analyte/ID	77MW03	77MW03F	77MW3	77MW3F
Iron	**18,600**	**19,200**	**16,600**	**14,600**
Lead	1.2 J	0.50 U	**33.6**	0.50 U
Manganese	**600**	**609**	**518**	**512**
MTBE	**130**	NA	**140**	NA

MW-02				
	ROUND 1		ROUND 2	
Analyte/ID	77MW02	77MW02F	77MW2	77MW2F
Aluminum	**557**	19.0 U	21.4 J	19.0 U
Arsenic	**43.9**	**39.4**	**35.8**	**31.6**
Iron	**38,800**	**37,500**	**38,900**	**36,300**
Manganese	**4,840**	**4,680**	**4,870**	**4,460**
Sodium	**669,000**	**644,000**	**532,000**	**507,000**

LEGEND

- Building
- Fence Line
- Site Boundary
- Lot Line
- Catch Basin
- Monitoring Well
- NJDEP Exceedance:
  - Red - Hexavalent Chromium
  - Yellow - Other Metals
  - Green - Other Analytes

Notes:
(1) All results in ug/L
(2) NJDEP CLASS IIA/GWQS/IGWQC
Exceedances shown as bolded values
J - Estimated
NA - Not Analyzed
U - Not Detected
(3)

Analyte	NJDEP GWQS/IGWQC
Aluminum	200
Arsenic	8
Iron	300
Lead	10
Manganese	50
MTBE	70
Sodium	50,000

Base map source: L. Robert Kimball & Associates, Inc. April 3, 1997
NJ State Plane Coordinate System (NAD83)

N.J. Department of Environmental Protection

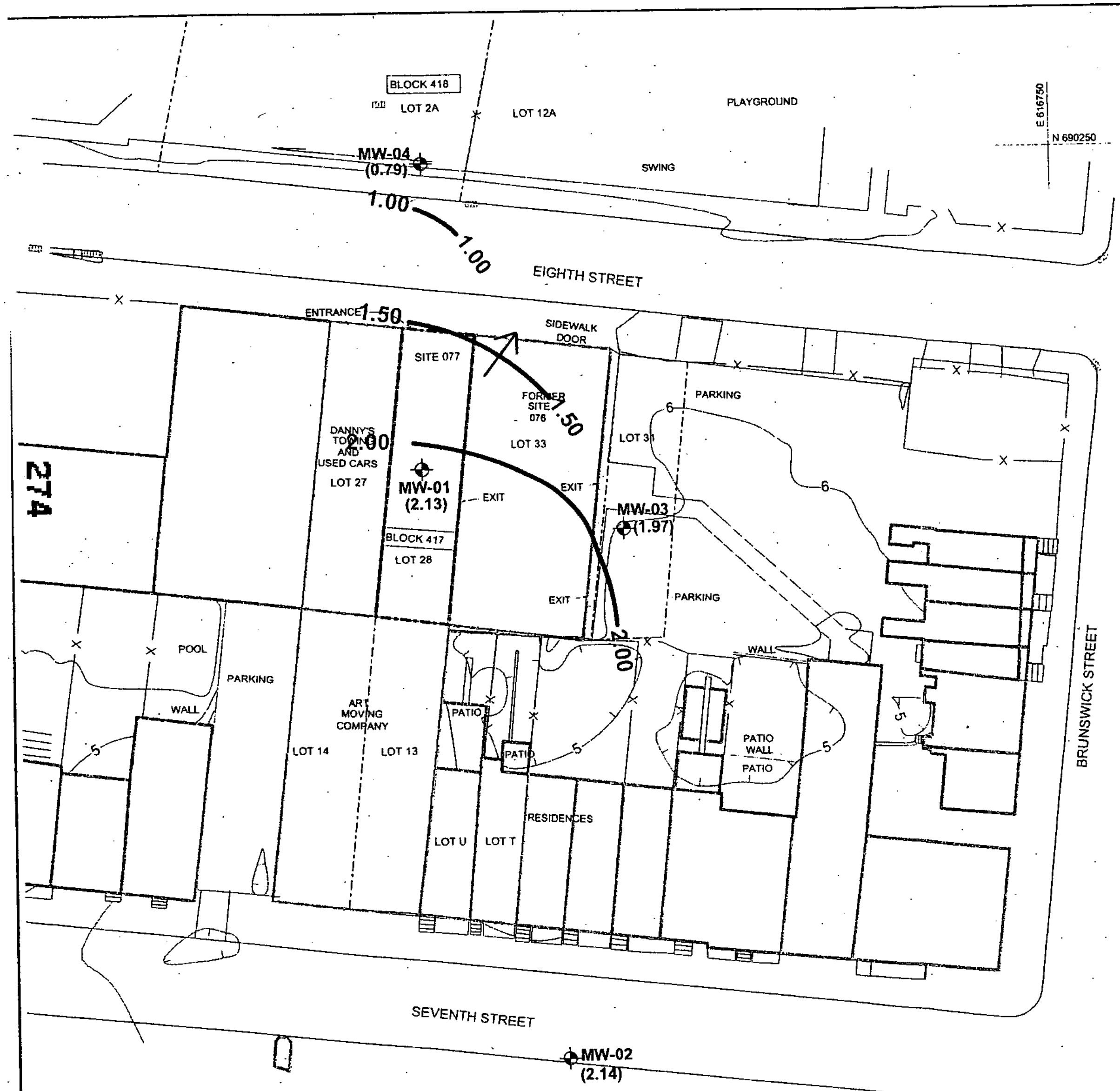
HUDSON COUNTY CHROMATE ORPHAN SITES - SITE 077 - 8TH STREET NO. 2, JERSEY CITY, HUDSON COUNTY, NEW JERSEY

GROUNDWATER CONTAMINANT DISTRIBUTION MAP

NJDEP CONTRACT No. A-85149

The Louis Berger Group, Inc.
30 Vreeland Road
Florham Park, NJ

FIGURE 9



LEGEND

- Building
- Fence Line
- Site Boundary
- Lot Line
- Catch Basin
- Monitoring Well
- Groundwater Elevation Contour
- Groundwater Flow Direction
- (2.13) Groundwater Elevation (Feet Above Mean Sea Level)

N

Monitoring Well ID	Sample ID	Hexavalent Chromium	Total Chromium	Antimony	Beryllium	Cadmium	Nickel	Vanadium
GWQS		NC	100	20	20	4	100	NC
ROUND 2								
MW-01	77MW1	0.10 UJ	5.2 J	2.5 J	0.20 U	0.29 J	3.4 B	2.0 J
	77MW1F	0.10 UJ	3.3 J	3.1 J	0.20 U	0.20 U	2.9 JB	0.86 J
MW-02	77MW2	0.10 UJ	0.66 J	1.8 J	0.20 U	0.57 J	0.30 U	0.81 J
	DUPE1	0.10 UJ	1.1 J	2.5 J	0.20 U	0.59 J	0.84 B	0.89 J
MW-03	77MW2F	0.10 UJ	0.37 J	2.5 J	0.20 U	0.45 J	0.30 U	0.72 J
	DUPE1F	0.10 UJ	0.35 J	4.7 J	0.20 U	0.32 J	0.30 U	0.87 J
	77MW3	0.10 UJ	0.69 J	3.0 J	0.20 U	1.5 J	9.8 J	1.3 J
	77MW3F	0.10 UJ	0.38 J	3.7 J	0.20 U	0.20 U	7.4 J	0.37 J
MW-04	77MW4	0.10 UJ	0.30 U	3.6 J	0.20 U	0.20 U	1.6 JB	1.0 J
	77MW4F	0.10 UJ	0.30 U	2.8 J	0.20 U	0.20 U	1.3 B	0.77 J

Notes:
- GWQS = NJDEP Class IIA Groundwater Quality Standards
- Shaded and bolded values exceed most stringent NJDEP SCC
- All results in ug/l
- B = Reported value is negated due to the presence of this analyte in the laboratory preparation blank.
- J = Estimated value
- JB = Estimated value; some portion of the reported value may be attributable to the blank contamination.
- NC = No Criteria
- U = Not detected above the Sample Quantitation Limit (SQL)
- UJ = Not detected above the SQL; however, the SQL is an estimate.

0 20 40 60 80 Feet
1"=40'

Base map source: L. Robert Kimball & Associates, Inc. April 3, 1997
NJ State Plane Coordinate System (NAD83)

N.J. Department of Environmental Protection

HUDSON COUNTY CHROMATE ORPHAN SITES - SITE 077 - 8TH STREET NO. 2, JERSEY CITY, HUDSON COUNTY, NEW JERSEY

GROUNDWATER ELEVATION AND ANALYTICAL RESULTS PLAN - NOVEMBER 2002

NJDEP CONTRACT No. A-85149

The Louis Berger Group, Inc.
30 Vreeland Road
Florham Park, NJ

FIGURE 8

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** 77S101
CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG-1634
PROJECT: HC Chromate Orphan Site 077 - Eighth Street No.2		**DATE STARTED:** 5/17/2002
DRILLING CONTRACTOR: Acorn DP Services		**DATE FINISHED:** 5/17/2002
DRILLING METHOD: Macrocore		**DRILLER:** P. Barkalow

BOREHOLE DATA		**WELL DATA**			
Diameter (in):	2	**Completion:**	-	**INSPECTOR:**	J. Lottig
Total Depth (ft):	16.00	**Total Depth (ft):**	-	**NORTHING:**	616538.95
Sampler:	Macrocore	**Screen Length/Slot:**	-	**EASTING:**	690199.72
Depth to Water (ft):	10	**Depth to Water (ft):**	-	**GROUND ELEVATION:**	6.33
Depth to Rock (ft):	N/A	**Permit No.:**	-	**TOC ELEVATION:**	N/A

NOTES: A soil sample was collected for chemical analysis from each one foot interval.

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		FILL					Concrete	**Concrete, No Sample Collected**
			FILL				7	Grayish black (N2) coarse to fine SAND, little Silt, little coarse to fine Gravel (30% fill material- ash, cinders, brick); moist.	**Sand (Fill)**
	2								
	4		FILL				2	Grayish black (N2) coarse to fine SAND, some Silt, little coarse to fine Gravel (30% fill material- ash, cinders, brick); moist.	**Silty Sand (Fill), No Samples Collected from 5 to 8 ft**
	6								

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Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
									Silty Sand (Fill)
	8		FILL				0	Grayish black (N2) coarse to fine SAND, some Silt, little coarse to fine Gravel (60% fill material- ash, cinders, brick); moist.	Fill (Silty Sand), No Sample Collected from 11 to 12 ft.
	10								
	12		SP				0	Moderate brown (5YR3/4) medium to fine SAND; trace Silt; saturated.	Sand
			SP-SC					Medium light gray (N6) medium to fine SAND, little Silty Clay; saturated.	
	14		PT					Moderate brown (5YR3/4) PEAT; saturated.	Peat, No Sample Collected from 15 to 16 ft. End of Boring at 16 ft
	16								

The Louis Berger Group, Inc.
30 Vreeland Road, Building A
Florham Park, NJ 07932

Drilling Log

BORING NO.:	77S102
CLIENT:	New Jersey Department of Environmental Protection
ROJECT:	HC Chromate Orphan Site 077 - Eighth Street No.2
DRILLING CONTRACTOR:	Acorn DP Services
DRILLING METHOD:	Macrocore
PROJECT NO:	JG-1634
DATE STARTED:	5/17/2002
DATE FINISHED:	5/17/2002
DRILLER:	P. Barkalow
INSPECTOR:	J. Lottig
NORTHING:	616559.92
EASTING:	690193.91
GROUND ELEVATION:	6.6
TOC ELEVATION:	N/A

BOREHOLE DATA		**WELL DATA**	
Diameter (in):	2	**Completion:**	-
Total Depth (ft):	16.00	**Total Depth (ft):**	-
Sampler:	Macrocore	**Screen Length/Slot:**	-
Depth to Water (ft):	6	**Depth to Water (ft):**	-
Depth to Rock (ft):	N/A	**Permit No.:**	-

NOTES: A soil sample was collected for chemical analysis from each one foot interval.

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		FILL					Concrete	Concrete (Fill), No Sample Collected
			FILL				2	Dark gray (N3) coarse to fine SAND, little Silt, little coarse to fine Gravel (60% fill material- ash, cinders, brick); moist.	Fill (Sand)
	2								
	4		FILL				1	Grayish black (N2) coarse to fine SAND, little Silt, little coarse to fine Gravel (60% fill material- ash, cinders, brick); moist.	
	6		FILL					Grayish black (N2) coarse to fine SAND, little Silt, little coarse to fine Gravel (60% fill material- ash, cinders, brick); saturated.	No Sample Collected from 7 to 8 ft.

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Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
									Fill (Sand)
	8		FILL				1	Grayish black (N2) coarse to fine SAND, little Clayey Silt, little coarse to fine Gravel (60% fill material- ash, cinders, brick); saturated.	No Samples Collected from 9 to 12 ft.
	10								
	12		SP				0	Moderate brown (5YR3/4) medium to fine SAND, trace Silt; saturated.	Sand
			SP-SC					Medium light gray (N6) medium to fine SAND, little Silty Clay; saturated.	
	14		PT					Moderate brown (5YR3/4) PEAT; saturated.	Peat, No Sample Collected from 15 to 16 ft. End of Boring at 16 ft
	16								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** 77S103

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG-1634
PROJECT: HC Chromate Orphan Site 077 - Eighth Street No.2		**DATE STARTED:** 5/20/2002
DRILLING CONTRACTOR: Acorn DP Services		**DATE FINISHED:** 5/20/2002
DRILLING METHOD: Macrocore		**DRILLER:** P. Barkalow
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lottig
Diameter (in): 2	**Completion:** -	**NORTHING:** 616507.69
Total Depth (ft): 16.00	**Total Depth (ft):** -	**EASTING:** 690178.48
Sampler: Macrocore	**Screen Length/Slot:** -	**GROUND ELEVATION:** 6.27
Depth to Water (ft): 5	**Depth to Water (ft):** -	**TOC ELEVATION:** N/A
Depth to Rock (ft): N/A	**Permit No.:** -	

NOTES: A soil sample was collected for chemical analysis from each one foot interval.

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		FILL					Concrete	**Concrete (Fill), No Sample Collected**
	2		FILL				<1	Grayish black (N2) coarse to medium SAND, little Silt, little coarse to fine Gravel (70% fill material- ash, brick); moist.	**Fill (Sand)**
	4		FILL				3	Grayish black (N2) coarse to medium SAND, little Silt, little coarse to fine Gravel (70% fill material- ash, brick); petroleum odor; moist.	
			FILL					Medium gray (N5) coarse to medium SAND, little Silt, little coarse to fine Gravel (70% fill material- ash, brick); petroleum odor; saturated.	**No Samples Collected from 6 to 8 ft.**
	6								

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
									Fill (Sand)
	8		FILL				2	Medium gray (N5) coarse to medium SAND, little Silt, little coarse to fine Gravel (70% fill material- ash, brick); petroleum odor; saturated.	**No Samples Collected from 9 to 12 ft.**
	10								
	12		FILL				1	Medium gray (N5) coarse to medium SAND, little Silt, little coarse to fine Gravel (70% fill material- ash, brick); petroleum odor; saturated.	
			PT					Olive black (5Y2/1) PEAT; saturated.	**Peat, No Sample Collected from 14 to 16 ft.**
	14								
	16								**End of Boring at 16 ft**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	BORING NO.: 77S105
CLIENT: New Jersey Department of Environmental Protection		PROJECT NO: JG-1634
ROJECT: HC Chromate Orphan Site 077 - Eighth Street No.2		DATE STARTED: 5/20/2002
DRILLING CONTRACTOR: Acorn DP Services		DATE FINISHED: 5/20/2002
DRILLING METHOD: Macrocore		DRILLER: P. Barkalow
BOREHOLE DATA	WELL DATA	INSPECTOR: J. Lottig
Diameter (in): 2	Completion: -	NORTHING: 616496.37
Total Depth (ft): 20.00	Total Depth (ft): -	EASTING: 690130.16
Sampler: Macrocore	Screen Length/Slot: -	GROUND ELEVATION: 5.78
Depth to Water (ft): 4	Depth to Water (ft): -	TOC ELEVATION: N/A
Depth to Rock (ft): N/A	Permit No.: -	

NOTES: A soil sample was collected for chemical analysis from each one foot interval.

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		FILL					Concrete	Concrete (fill), No Sample Collected
			FILL					Grayish black (N2) coarse to fine SAND, some Silt, little coarse to fine Gravel (50% fill material- ash, brick); moist.	
	2						0		
									Silty Sand (Fill)
	4		FILL				17	Grayish black (N2) coarse to fine SAND, some Silt, little coarse to fine Gravel (50% fill material- ash, brick); petroleum odor; saturated.	No Samples Collected from 2 to 4 ft
	6								No Samples Collected from 5 to 8 ft.
	8		FILL				5	Grayish black (N2) medium to fine SAND, some Silt, little coarse to fine Gravel (50% fill material- ash, brick); petroleum odor; saturated.	No Samples Collected from 10 to 12 ft.

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	PROJECT NO.: JG-1634	BORING NO.: 77S105

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10								Silty Sand (Fill)
	12		FILL				4	Grayish black (N2) medium to fine SAND, some Silt, some coarse to fine Gravel (50% fill material- ash, brick); petroleum odor; saturated.	No Samples Collected from 13 to 16 ft.
	14								
	16		PT				0	Olive black (5Y2/1) PEAT; saturated.	Peat, No Samples Collected from 19 to 20 ft.
	18								
	20								End of Boring at 20 ft

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** 77S106

CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG-1634
ROJECT: HC Chromate Orphan Site 077 - Eighth Street No.2		**DATE STARTED:** 5/17/2002
DRILLING CONTRACTOR: Acorn DP Services		**DATE FINISHED:** 5/17/2002
DRILLING METHOD: Macrocore		**DRILLER:** P. Barkalow
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lottig
Diameter (in): 2	**Completion:** -	**NORTHING:** 616496.86
Total Depth (ft): 20.00	**Total Depth (ft):** -	**EASTING:** 690113.97
Sampler: Macrocore	**Screen Length/Slot:** -	**GROUND ELEVATION:** 5.70
Depth to Water (ft): 6	**Depth to Water (ft):** -	**TOC ELEVATION:** N/A
Depth to Rock (ft): N/A	**Permit No.:** -	

NOTES: A soil sample was collected for chemical analysis from each one foot interval.

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		FILL					Concrete	**Concrete (Fill)**
	2		FILL				0	Grayish black (N2) coarse to fine SAND, little Silt, trace coarse to fine Gravel; moist.	**Sand (Fill)**
	4		FILL				14	Grayish black (N2) medium to fine SAND, some Silt, little coarse to fine Gravel (30% fill material- ash, brick); saturated.	**Silty Sand (Fill), No Samples Collected from 6 to 12 ft.**
	6								
	8		FILL				0	No Recovery	

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**PROJECT NO.:** JG-1634	**BORING NO.:** 77S106

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10								Silty Sand (Fill)
	12		FILL				0	Grayish black (N2) medium to fine SAND, some Silt, little coarse to fine Gravel (20% fill material- ash, brick); saturated.	No Sample Collected from 14 to 15 ft.
	14								
	16		FILL				0	Grayish black (N2) medium to fine SAND, some Silt, little coarse to fine Gravel (20% fill material- ash, brick); saturated.	
	18		PT					Olive black (5Y2/1) PEAT; saturated.	Peat, No Sample Collected from 19 to 20 ft. End of Boring at 20 ft
	20								

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	**Drilling Log** Page 1 of 2	**BORING NO.:** 77S107
CLIENT: New Jersey Department of Environmental Protection		**PROJECT NO:** JG-1634
PROJECT: HC Chromate Orphan Site 077 - Eighth Street No.2		**DATE STARTED:** 5/17/2002
DRILLING CONTRACTOR: Acorn DP Services		**DATE FINISHED:** 5/17/2002
DRILLING METHOD: Macrocore		**DRILLER:** P. Barkalow
BOREHOLE DATA	**WELL DATA**	**INSPECTOR:** J. Lottig
Diameter (in): 2	**Completion:** -	**NORTHING:** 616508
Total Depth (ft): 20.00	**Total Depth (ft):** -	**EASTING:** 690079.98
Sampler: Macrocore	**Screen Length/Slot:** -	**GROUND ELEVATION:** 6.40
Depth to Water (ft): 6	**Depth to Water (ft):** -	**TOC ELEVATION:** N/A
Depth to Rock (ft): N/A	**Permit No.:** -	

NOTES: A soil sample was collected for chemical analysis from each one foot interval.

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		FILL					Concrete	**Concrete (Fill), No Sample Collected**
			FILL				0	Light gray (N7) coarse to fine SAND, little Silt, trace coarse to fine Gravel; moist.	**Sand (Fill), No Sample Collected from 3 to 4 ft.**
	2		FILL					Grayish black (N2) coarse to fine SAND, little Silt, trace coarse to fine Gravel (80% fill material- ash); moist.	**Fill (Sand)**
	4		FILL				0	Grayish black (N2) coarse to fine SAND, some Silt, trace coarse to fine Gravel (80% fill material- ash); saturated.	**No Sample Collected from 6 to 8 ft.**
	6								▽
	8		FILL				0	Grayish black (N2) coarse to fine SAND, some Silt, trace coarse to fine Gravel (80% fill material- ash; wood); saturated.	**No Samples Collected from 9 to 12 ft.**

The Louis Berger Group, Inc. 30 Vreeland Road, Building A Florham Park, NJ 07932	PROJECT NO.: JG-1634	BORING NO.: 77S107

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	10								Fill (Sand)
	12		FILL				0	Grayish black (N2) coarse to fine SAND, some Silt, little coarse to fine Gravel (80% fill material- ash; wood); saturated.	No Samples Collected from 14 to 16 ft.
	14								
	16		SP-SM				0	Dark yellowish brown (10YR4/2) medium to fine SAND, little Silt; saturated.	Sand
			PT					Dusky yellowish brown (10YR2/2) PEAT; saturated.	Peat
	18								
	20								End of Boring at 20 ft

<u>ATTACHMENT V</u>

MEMORANDUM

To: Hudson County Chrome Site 76 & 77 File

From: Andrew Cyr, NJDEP, BEMSA

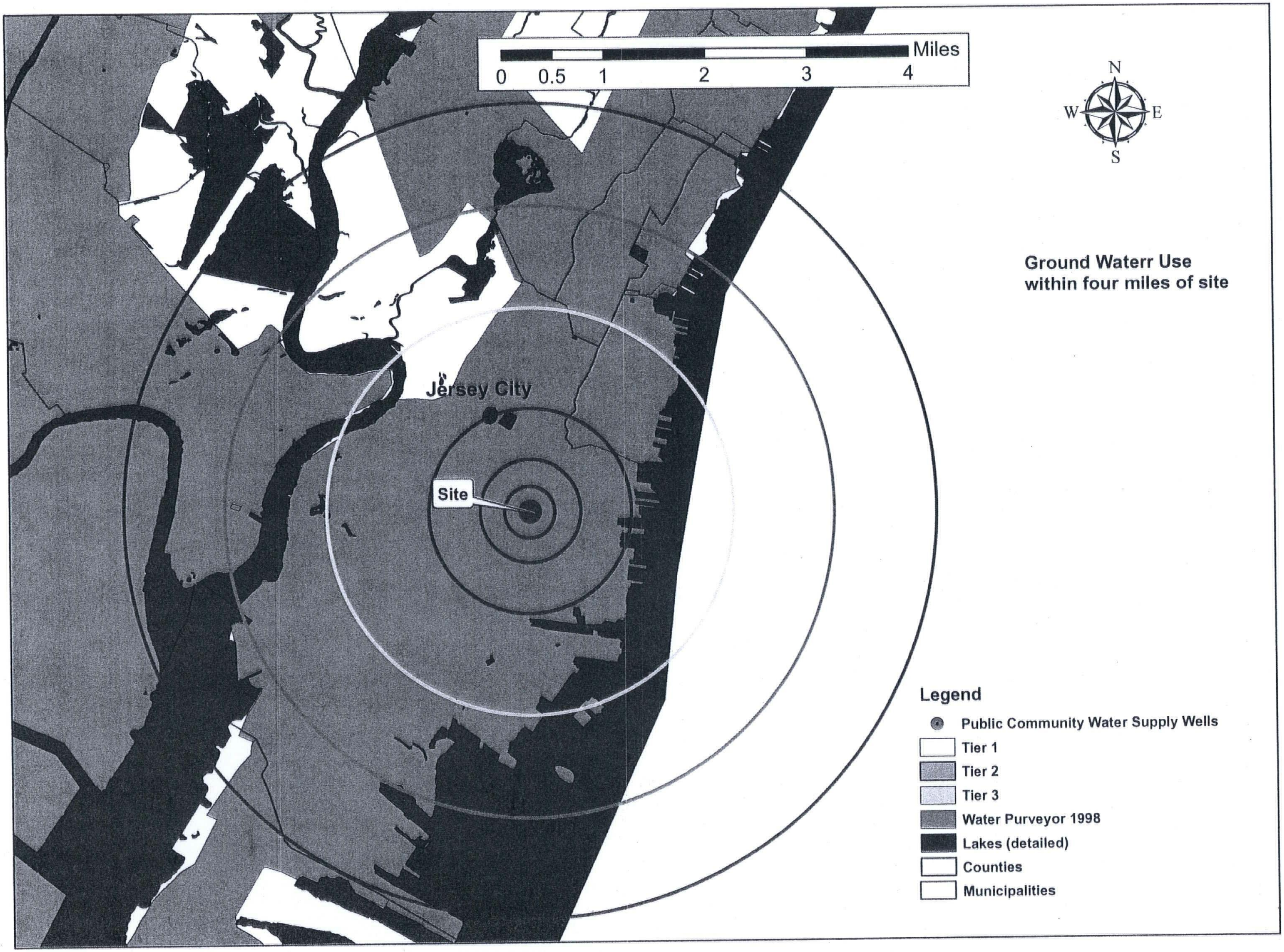
Subject: Site Visit Eighth Street Site

On September 22, 2010, the writer and Mr. Carlton Dudley of the Bureau of Environmental Measurements and Site Assessment (BEMSA) inspected the Eight Street Site. The site consists of two buildings, a two-story cinderblock building used as a show room./office and warehouse and another single story building used as storefront and warehouse. We met with Mr. Carl Karl Yedibalian owner. I informed Mr. Yedibalian that the NJDEP was conducting the inspection as part of an EPA funded Site Reassessment. Site 77 is located at 383 Eighth Street and is the older single story warehouse. The concrete floors within the warehouse were painted along with the cinder-block walls. I asked Mr. Yedibalian if they had observed any yellow crystals or staining on the walls or floor of the building, he stated they had not. Mr. Dudley and I inspected the interior of the building. No staining indicative of hexavalent chromium was observed. Much of the interior consisted of metal shelving used for various parts storage which limited our view. A flush-mount monitoring well was observed within the warehouse (MW01) as well as the locations of several prior soil boring locations. Site #76 located at 379 – 381 Eighth Street is almost entirely occupied by two-story building which is operated by GKY industries. Another monitoring well (MW03) was observed within the parking area for this building.

Located west of 383 is Danny's Towing, the Art Moving Company building located adjacently southwest of the site had been leveled and new residential condos were in the process of being constructed. A school (the Resurrection School) is located on the south side of Seventh Street, approximately 200 feet south of the site. Jones Parks, consisting of several baseball fields, a roller hockey rink and playground is located across Eight Street just north of the site.

Mr. Yedibalian asked about the monitoring wells and why they had not been sealed. Mr. Yedibalian stated that he would like the monitoring wells installed on his property properly sealed.

ATTACHMENT W


Miles
0 0.5 1 2 3 4
N
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Ground Waterr Use
within four miles of site
Jersey City
Site
Legend
Public Community Water Supply Wells
Tier 1
Tier 2
Tier 3
Water Purveyor 1998
Lakes (detailed)
Counties
Municipalities